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LONGMANS, GREEN, AND CO.

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WORK AND PLAY IN GIRLS' SCHOOLS

WORK AND PLAY

IN

GIRLS' SCHOOLS

BY

THREE HEAD MISTRESSES

DOROTHEA BEALE
LUCY H. M. SOULSBY
JANE FRANCES DOVE

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PREFACE.

THE book is divided into three Sections, and each of the writers is responsible only for her own part, and yet I hope it will not be merely a composite book; all the contributors are members of the teaching staff of the Cheltenham Ladies' College, or have at some time formed part of it, and now, as then, there is I believe a unity of purpose, which will give harmony to the work.

The book is intended to be a practical one, helpful chiefly to teachers in our large Secondary Schools; the limits imposed compel us (1) to deal more with methods than the underlying principles; (2) to isolate more or less the influences of the school from those of the manifold environment, which are at the same time forming the body, mind and character of the child, and which seem to make the school-life of relatively small moment; (3) we have to treat only of a few years of life; for, like the bird of the fable, the soul of the child comes to us often from some unknown region, stays for a while in

our banqueting hall, and then passes again into the darkness.

Yet I suppose the experience of most of us bears witness to the great importance of the school-life as one of the factors in the "development of a soul". "The atmosphere, the discipline, the life" of the school is so potent, that the word education has been often limited to the school period, and the pupils of an Aristotle, an Ascham, an Arnold, speak of their teachers as having given them a new life. Our work is not insignificant, and our earnest study must be by instruction and discipline, by what Plato calls music and gymnastic, to promote the harmonious development of the character; to bring our children into sympathetic relations with the noble and the good of all ages; to lead them into the possession of that good land, "flowing with milk and honey," the spiritual inheritance of humanity.

I would fain hope, that one day all teachers will endeavour to spend at least some time, before entering on professional work, in studying the art, the science, the philosophy of education. In this little book we have had to restrict ourselves almost to the first, but we have referred to works which deal with the higher aspects of the subject. I would earnestly press on all my readers, that their own education must

never be regarded as finished; if we cease to learn, we lose the power of sympathy with our pupils, and a teacher without intellectual and moral sympathy has no dynamic, no inspiring force. Especially should all teachers be students of psychology, of that marvellous instrument, from which it is ours to draw forth heavenly harmonies. To many a teacher might the words of Hamlet be addressed by her pupils :—

How unworthy a thing you make of me! You would play upon me; you would seem to know my stops; you would pluck out the heart of my mystery; you would sound me from my lowest note to the top of my compass; and there is much music, excellent voice in this little organ; yet cannot you make it speak. Do you think I am easier to be played on than a pipe? Though you can fret me, yet cannot you play upon me.

DOROTHEA BEALE.

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SECTION I.

INTRODUCTION.

By DOROTHEA BEALE.

I HAVE been asked to undertake one section of a book on the education of girls, and to confine myself, as far as possible, to the intellectual aspects of education, leaving to others the task of dealing with the physical and moral aspects. I shall try to keep within the assigned limits—abstain from any systematic treatment of the laws of hygiene, and write no formal treatise on school ethics—but all the intellectual work must of course be conditioned by the necessities of the physical life, and the final cause of all education must be the development of a right character.

Subject.

I am to treat the subject too with special reference to the large secondary schools which have come into existence during the last fifty years, and in doing so, I must dwell briefly upon the changes which have taken place in the ideals and theories regarding the education of girls, which have found expression in these schools, and in the Women's Colleges. I shall speak of what has yet to be accomplished, for we are still in a period of transition, and I shall consider by what means we may best realise our ideals.

Education of girls in secondary schools.

C1

Now in education there is always a twofold object. Bacon tells us the furthest end of knowledge is "the glory of the Creator and the relief of man's estate"—in other words, the perfection of the individual, and the good of the community. In some periods, indeed in pre-Christian times generally, the latter was emphasised,[1] men were to live for the commonwealth; the individual was regarded as an instrument for accomplishing certain work—he was not thought of as an end in himself. Thus even the most enlightened among ancient writers have spoken of slaves, as if they were mere chattels. Our moral sense is shocked by much that we read in Plato and Aristotle, and still more by what the laws of Rome permitted. Christianity on the other hand taught that the primary relationship of each was to the All-Father, the primary duty of each to realise God's ideal for His children, to become perfect, and by glorifying human nature to glorify God. This was the first commandment, but the second was implied in the first—self-love was not selfish, the love of God descending from heaven became the enthusiasm of humanity.

Aim of education

"Education," writes Mr. Ruskin (*Queen's Gardens*), "is the leading human souls to what is best and making what is best out of them; and these two objects are always attainable together, and by the same means; the training which makes men happiest in themselves, also makes them most serviceable to others." "The only safe course,"

as regards the individual,

[1] Even Milton writes: "I call a complete and generous education that which fits a man to perform justly, skilfully and magnanimously all the offices to the public and private, of peace and war".

writes Miss Shirreff (*Intellectual Education*), "is to hold up individual perfectness as the aim of education."

And so the task of the educator is in the first instance to develop to the highest perfection all the powers of the child, that he may realise the ideal of the All-Father. But the perfection of man "the thinker," the anthropos, "the upward looker," can be attained only when as a son he enters into, and co-operates with the Divine purpose in thought and act: therefore to know God and His laws for His children's education and development, is the beginning and the end. These laws man reads (1) in the world of Nature with which science has to do; (2) in human history and institutions; (3) in the hidden life of the soul—of which philosophy and religion and ethics treat. He has to seek first to know truth, to bring his will into conformity with the Divine thought, and then to utter what is true and right in word and deed; only thus will the kingdom of righteousness be set up, and the perfection of the whole—the well-being of the commonwealth—of "man writ large" be secured. The most civilised nations are devoting their best energies to the work of education, realising that upon this depends their very existence—that it is not by starving the individual life, and merging it in the general, but by developing each to perfection, that the common good will be secured. They trust less to the power of laws and institutions, more to the power of a right education—less to external restraint, more to the wisdom that comes of a wisely directed experience.

as regards the commonwealth.

These principles have guided the new movement for women's education, and those who have followed the changes in public

Reforms since 1848.

opinion, since people have thought more of each individual as an end in himself, are full of confidence and hope. The reformers said: "Let us give to girls an invigorating dietary, physical, intellectual, moral; seclusion from evil is impossible, but we can strengthen the patient to resist it".

'Tis life, not death for which we pant,
More life and fuller, that we want!

Such were, I believe, the feelings and the thoughts of those who initiated just fifty years ago the great movement, which found its first visible expression in the foundation of Queen's College by Maurice and Kingsley and Trench and others like-minded and less known. This was soon followed by the opening of Bedford College, 1849, and the Cheltenham Ladies' College, 1853. Miss Buss and her brothers, in association with Mr. Laing, established the first great High School, and Mrs. Grey and Miss Shirreff carried on the movement in that direction; from the Union founded by them grew up the G.P.D.S. Co., while Miss Davies with far-seeing wisdom won over Cambridge professors (amongst whom I may specially mention Professor Henry Sidgwick and James Stuart) to offer the highest culture to women.

The leaders had to ask and answer many questions. What direction, what shape should the new movement for higher education take? Should there be two sorts of education for girls and boys? The Schools' Inquiry Commission had shown that a specially feminine education had not produced very successful results, and the leaders said: Let us give to girls the solid teaching in languages and mathematics and

science, which are found to strengthen the powers of boys, and prepare them to do good work of many kinds. If it was objected that women were to rule in the home, and men in the larger world, they argued, that for girls as for boys, the right course was to give a liberal education. The boy does not learn in the school the things which will be required in his future business or profession, but he brings to these the cultivated mind, the power of work, the disciplined will.

And the world is more and more recognising that the leaders were right, and schools have arisen in all our great towns. Fifty years ago there were dismal prophecies—an outcry that study would ruin health. Now it is a common remark that there is a general improvement in physique. Women too are more conscious of their responsibilities in the life of the family, as well as in that of the country, especially in social and church life. They feel, that though they may have but the "smallest scruple" of excellence, they must render for it "thanks and use". Besides, another good has been more and more realised; as Mrs. Jameson, in her beautiful lecture,[1] set forth, girls taught on the same lines, and women who can enter into the subjects of study and thought which occupy the minds of their fathers, husbands, sons, have more understanding, more sympathy, more power to make the home what it should be; the only healthy intellectual companionship is communion between active minds, and the highest purposes of marriage are unfulfilled, if either husband or wife lives in a region

Results physical and moral.

[1] "Communion of Labour."

of thought which the other cannot enter. Besides, those many women who remain unmarried can, if well educated, find in some form of service the satisfaction of their higher nature. Surely women trained in good schools and colleges have as wives and mothers shared the labours and entered more fully as companions into the lives of husbands and children. The names of many will occur to my readers, but one cares not to name the living. We see every year at the Conference of Women Workers, that the seed sown in faith has brought forth fruit; that the whole aspect of the woman's realm has changed since the days of Evelina and Miss Austen.

But none of us may rest in that which has been attained. We ask for the "wages of going on and not to die". There is earnest endeavour on the part of all engaged in the work of education, which has found expression in such societies as the Parents' Educational Union, the Child Study Society, and the Teachers' Guild. Teachers are not content with the school year, but holiday courses are the order of the day, and many are seeking training, and others ask for a year or a term to improve, and books on education are pouring from the press, and some of us, who have gained experience which may be helpful to others, feel bound, though much hindered by the calls of active life, to share those experiences, and say what we can about the ideals, the principles, the methods, which, we trust, have already, in spite of the gloomy portents of years gone by, improved the physical, the intellectual and moral vigour of those who have shared the larger life, entered into the higher intellectual interests, and undergone the strengthening discipline of our large schools.

With these preliminary remarks, I enter upon the subject of the curriculum; I have drawn up a table which I shall proceed to discuss. I have classed the subjects of education under five heads, and divided the pupils in a general way also into five classes. But before I deal with the practical, let me speak of the ideal. There is nothing so practical as *ideas*—these are the moving power of all our acts. Curriculum.

If what I have said is true, the subject cannot be treated in reference to girls only; not because I would assimilate the teaching of girls to that of boys, but because the teaching of both should aim at developing to the highest excellence the intellectual powers common to both. The teaching of modern science tells us that both pass through the same lower stages, that they may rise into the higher, and all history tells us that men and women

> Rise or sink
> Together, dwarfed or godlike, bond or free.

So we ask generally what is the Education of Man? Fröbel has rightly emphasised the last word. It is the development of that which distinguishes man from all the lower forms of life "summed up" in him, that can alone be properly called the Education of Man: other creatures can live, as he does, the nutritive or vegetable life, which goes on of itself—other animals live the conscious life, they see and know, but to man alone it is possible to objectify all things by transcending them, and even that lower self, which is part of his dual nature; he is able to know himself both as "I" and "me"; he brings to sensation the formative power of his own thought, makes, as Kant has said, the

universe which he did not create. And so man does not merely perceive, but apperceive, takes into his own being ideas, thoughts; combines, associates these,—and indeed it is difficult to speak of these ideas otherwise than Herbart does, as entities, by which the mind grows, fashioning them to its own uses, as the body does, the food on which it lives. Because he can objectify thus, language is possible. Man gives to thoughts, these "airy nothings, a local habitation and a name"; he is able to plan, to project and therefore to form judgments.

But if he is related to that world to which the senses reach, he is also in relation, through an inward feeling which we call sympathy, with other "subjects," able to recognise in others that which he knows in himself as mind; if he finds himself so related to the world of sense, that he responds to its touch, much more nearly is he in relation with other personalities; these he knows, before he recognises objective nature; through other minds his own is educated, and so the humanities take the first place; he enters into relations through the *communis sensus* with a world of thinking beings. These persons communicate thoughts, specially through (*a*) language immediate, and through written language. By written speech the limitations of space and time are abolished, and we are able to speak not only of men, but of man, for not only is his physical life continuous, but his mental and moral life through the ages is one. So from language we pass to (*b*) history and literature and historic act, the record of what men have done and suffered and thought and recorded, not in books only but in all material things; for man the dead live; and as the actors pass from the stage, history, no less than philosophy and science, tends upwards to those

higher regions of thought, where we ponder on the (*c*) mysteries of man's self-conscious life, on his relation to other minds, and to the One whose offspring we are, and in Whom all things live and move and have their being.

The subjects of study then may also be classified under five headings:—

I. The Humanities: which have to do with man, known objectively through word and deed, in language and literature, in history and art; subjectively, as in ethics, religion, philosophy.

II. Mathematics: embracing three divisions relating to space, number, energy in the abstract—these have to do with necessary truth.

III. Science: which rests not on a basis of thought only, but on facts given through sense objectively.

IV. Æsthetics: which may be classed under the three heads, as music, painting and the other arts—considered subjectively.

V. The exercises suitable for the physical development.

It is with the first section that every teacher has to do; though he may be a specialist for science or mathematics or music, he has always to do with man in his manifold relations, he has ever to do with the humanities. It must be the constant study of the teacher to find the best means of developing the powers of thought, of calling forth right motives of action, developing right habits, and so forming noble characters, which is the final cause of all his labours. Ever throughout life he will by study and experience deepen and extend his knowledge, but it is earnestly to be desired that he should have some leisure for definite preparation by

HOURS OF STUDY INCLUDING PREPARATION PER WEEK.

		Subjects.	A. Under 8 years.	B. 8 to 12 years. About 24 hours.	Hrs. B and C.	C. 12 to 16 years. About 30 hours.	D. 16 to 18 years. About 36 hours.	E. Over 18 years.
I.	Humanities.	1. Language.	English reading and French *v. voce*.	Elementary ideas of grammar, French *v. voce*, and reading and translation into English, learning poetry, dialogues, etc.	12	Grammar; increasing attention to philology; French, with German, or Latin.	French, German or Latin. In some cases one other language.	An additional language, Greek or Italian.
		2. Man objectively. { History. Literature Art.	Mythological tales and stories from history. Learning poetry.	Time maps and epochs in world's history. English history treated biographically. Stories from ancient history. Learning poetry.		English history in periods and corresponding literary periods with special books. Outlines of general history, ancient and modern, with time maps.	English constitutional history. Special period of English. Also of ancient or modern. Difficult books in English.	Ancient classics in the original or translations. Foreign classics and view of European literature
		3. Man subjectively. { Ethics. Religion. Philosophy.	Bible stories, simple hymns and prayers.	Bible lessons selected. Learning simple passages from New Testament, hymns and collects.		A gospel. Instruction in the prayer-book, etc.	St. John or epistles. Doctrinal teaching.	Fundamental ideas of philosophy. Christian dogmatics and ethics.
II.	Mathematics.	4. Arithmetic and Algebra.	Arithmetic, chiefly with concrete objects.	Arithmetic in some cases generalised to algebra for older children, for younger still much concrete.	3 to 5	Arithmetic and algebra to quadratics.	Advanced pure and mixed mathematics.	
		5. Geometry.	Simple ideas of form.	Elementary practical geometry. Many problems. In some cases a beginning of logical demonstrations.		Euclid I. and II., or equivalent.		
		6. { Kinematics. Mixed Mathemats., *e.g.*, Mechanics.				Elementary mixed mathematics.		

III. Science.	7. Natural Science.	Object lessons.	Botany, zoology, astronomy, laws of health—in succession.	2 to 4	Botany, zoology, astronomy, laws of health—in succession.	Physiology and one or more branches of physical science.
	8. Physiography.	Making map of school and near places; modelling in clay or sand.	Erdknude, physiography, natural phenomena.		Erdknude, physiography or natural phenomena.	
	9. Molecular Science.				Chemistry, heat, light, electricity—in succession.	
IV. Æsthetics.	10. Music.	Sol-fa singing.	Instrumental music, singing, elocution.	7 to 9	Instrumental music, singing, elocution.	Some one branch.
	11. Drawing, etc.	Drawing with pencil and brush.	Drawing and painting.		Drawing and painting.	
	12. Plastic Arts, etc.	Modelling in clay. Basket making, cardboard sloyd, etc., etc.	Various kinds of handwork.		Various kinds of handwork.	
V. Athletics.	13. Gymnastics, etc.		Systematic drill.		Systematic drill.	
	14. Games.	Kindergarten games and drill.	Games.		Games.	
	15. Country Excursions.		Field clubs.		Field clubs.	

the study of education as an art, a science, a philosophy, before entering on his responsible work. In this, as in everything else, only those who have gained the knowledge are really judges of its value. The man who knows no foreign tongue, supposes he understands English, but we know in how poor and faulty a way. A study of the mysteries of our own being, of the fundamental basis of philosophy and psychology, personal knowledge of and sympathy with the great thinkers and philosophers and martyrs of education, must move us to more purposeful and thoughtful and devoted lives, and give us a joy that we cannot feel when we are working blindly and mechanically, without the faith which works by love.

I have mentioned at the close of the introduction some books not too large or difficult which will be helpful to those who desire to begin the serious study of the subjects included under the general heading of pedagogy.

In the table (p. 10) I have arranged courses of study and grouped pupils according to age, but only for those called B and C have I attempted to give the time each week, which might be allowed on an average for serious study. I think the Bs generally and the Cs almost always should follow a fixed course, though some variation should be permitted to the Cs. The Ds and Es should take special directions, dropping some subjects and giving much time to others. Under the head of B, I have given what is perhaps the nearest approach to the normal type in my own school. Those who do not learn music, can of course take an extra language, or otherwise cultivate a special subject; those who are but slightly pervious to mathematical ideas are allowed to drop Euclid, after having done

enough to profit by the wholesome discipline of writing out propositions say up to Euclid I. 26. These may perhaps add another musical instrument or some manual work.

The principle I would insist on is that our curriculum should, to use a sensible figure, be pyramidal, having a broad base and narrowing; the total cubic content might be the same each year, but in proportion as the subjects taken were fewer, there would be greater depth. Thus the Cs would specialise to a slight extent, the Ds should do so still more, and the Es have found out their vocation, so that for these last no time-table can be given.

In drawing up a time-table I have given only the general lines, and assigned an average time for each section; the case of every individual must be separately considered, and there should always remain some hours of leisure—in the highest classes I have arranged for school work about eight hours out of the twenty-four. If we give four hours to meals and outdoor exercise, and eight to sleep, we have a margin of four hours—a considerable amount of time, if multiplied by six; part of this may be given to general reading, part to social and family life, but for the growing and developing mind there must be time for solitude, for entering into the secret chamber, and listening for the voice heard only in the stillness. We read much in praise of "Eyes" and much in dis-praise of "No-eyes," but there are times when great thinkers are blind to outward things, and deaf to earthly voices; it is at such times there rise before the mind's eye ideals which fashion the whole life. I am sure that in these days the

young lose much for want of more quiet on Sundays. There may have been over strictness in the past—there is now a surprising ignorance of the Bible and the grounds of faith. The silence rules of a good school tend to produce a spirit of repose, and a library where no speaking is allowed is a help. Rules which hinder idle talk in the bedrooms are a great boon to those who find the value of quiet at the beginning and end of the day, and I earnestly hope that the excitement of the playground may never supersede the country rambles which have been fruitful of spiritual health to many of us.

Silence.

In considering how I shall best make this small volume of use to teachers in high schools, I propose to adopt the following plan. First to treat of a few general matters which belong to organisation and the methods of management—*e.g.*, distribution and economy of time, corrections, marks, etc.

Then to deal with the subjects of the curriculum in order, in a series of papers by myself and my colleagues.

In Part I. I have written first of language generally, embracing reading, speaking, grammar, composition, foreign tongues. It will be clear to all that I could not possibly, in the few pages assigned to each subject, treat the matter exhaustively, but I hope I may strike out some lines of thought which will be helpful, and the lists of books may assist teachers in their studies. In most subjects I have been able to get a few papers from members of my staff, past and present. Under the head of Language I have one from Mr. Rouse, a most able teacher, who had many years' experience with our elder pupils, specially those reading for classical honours in the University of London.

In History and Literature I have papers by Miss A. Andrews, Miss Hanbidge and Miss Lumby, the very successful teachers who take these subjects in the London and Higher Cambridge class; there is also a paper on Economics by Miss Bridges.

In Part III. I have papers by four specially able and experienced teachers—Miss de Brereton Evans, D.Sc. Lond., Miss Reid, B.Sc. Lond., Miss Leonard, B.Sc. Lond., and Miss Laurie.

In Part IV. I have a number of short papers by members of our teaching staff.

Section II. has been assigned by the publishers to another hand, and for that I am not responsible. Upon the basis of this classification, I have drawn up a table showing how the methods of teaching these subjects will vary with the age of the pupil, and what is, I consider, the best order of subjects. I have also added some chapters on various subjects—as Spelling Reform and the Relation of School to Home.

Before proceeding further it will be best to consider what is the amount of time at our disposal for school teaching. The division of the year into three terms of about twelve weeks, consisting of five or six days each, is so generally adopted that we may take that for granted. The years of school life are at the utmost about ten—in the case of most girls far less. Time available.

For day schools in large towns, attended by pupils from considerable distances, two attendances are impossible, and the morning has to last from about 9 or 9·30 to 1 or 1·30. Of the four hours about three and a half are available for lessons, the remaining half-hour being taken up with the general assembly for prayers and a brief

interval for recreation; but these twenty-one or twenty-four hours are not spent, as parents are apt to imagine, in poring over books, but are varied by lessons in gymnastics, drawing, singing. Some pupils in large towns remain to dine at the school, and have afternoon teaching in accomplishments. In small towns they return. Thirty hours a week should, I think, be the limit of time given to study for girls of school age. Students fully grown may study six hours a day. Eight should, I think, not be exceeded by any.

Length of lesson.

In arranging the time-table, several things have to be considered. (1) A, the youngest children, would have no lessons of more than half an hour, and not more than two hours of definite instruction, the remainder being occupied with games, drill, singing and various hand occupations. Those under eight would have a larger proportion of these last, and perhaps attend for a shorter time. The elder children can have a reading lesson before the general assembly, and the little ones might leave half an hour before the morning closes. If they wait for elder sisters, amusements may be devised. (2) In the case of all, an endeavour should be made to place those studies which make the heaviest demands on the attention as far as possible in the early morning hours. (3) The lessons for Sections B and C would average about fifty minutes, some being thirty minutes, others an hour, the drawing lesson being perhaps longer, whilst religious instruction following upon prayers would occupy half an hour, as would drill and singing. (4) Care should be taken to vary the subjects, so that if possible two lecture lessons should not follow one another, nor two on language, nor two mathematical lessons.

We have next to consider the order of study, what subjects are best adapted to the state of development of the child, or in what different ways the same subject may be treated to make it suitable at different ages. In this matter fatal mistakes are still made.[1] Happily the teachings of educational reformers have brought before us the evils of the neglect of psychological principles. We are shocked when we hear of mothers ignorant of physiology, feeding infants on bread and tea, and giving soothing syrups; we recognise the danger of too many sweets, and of cigars for growing boys—these have their parallels in the mental dietary. But it is not so much giving wrong things as the deprivation of right things at the right time that is fatal. It is wonderful how much unwholesome food can be disposed of by a vigorous child—there is a fit of sickness and it is gone; but we see in the adult bodily framework, the stunted skeleton, the decaying teeth, etc., the effect of starvation during years of growth. To deprive the child of the mental food and exercise necessary for his development at each period of his growth is a fatal error, the consequences of which are irreparable. This has been forcibly put by Dr. Harris, Chief Commissioner of Education, U.S.A. Speaking of the prolongation for man of the period of infancy required for his develop-

Order of study.

Dietary.

[1] "The logical order of a good course of instruction," writes Compayré (*Psychology Applied to Education*), "must correspond to the chronological order of development of the mental powers." "If," writes Herbert Spencer, "the higher faculties are taxed by presenting an order of knowledge more complex and abstract than can be readily assimilated, the abnormal result so produced will be accompanied by equivalent evil."

ment, that he may be adapted to the spiritual environment of the social community into which he is born, he writes: "Is it not evident that if the child is at any epoch inured into any habit or fixed form of activity belonging to a lower stage of development, the tendency will be to arrest growth at that point, and make it difficult or next to impossible to continue the growth of the child into higher and more civilised forms of soul-activity? A severe drill in mechanical habits of memorising, any over-cultivation of sense-perception in tender years, may arrest the development of the soul, form a mechanical method of thinking, and prevent the further growth into spiritual insight—especially on the second plane of thought, that which follows sense-perception, namely, the stage of classifying or even the search for causal relations, there is most danger of this arrested development. The absorption of the gaze upon the adjustments within the machine, prevents us from seeing it as a whole. The attention to details of colouring or drawing may prevent one from seeing the significance of the great works of art. . . . To keep the intellect out of the abyss of habit, and to make the ethical behaviour more and more a matter of unquestioning habit, seems to be the desideratum."

Tradition furnishes those who have made no formal study of the subject of mental growth with some empirical rules for a healthy dietary,—as Mr. Barnett has shown,[1] or our children would fare badly; but the evils of misplacing subjects in the order of study, of neglecting to teach the right subjects at the right

[1] *Teaching and Organisation*, p. 5.

time, and of partial starvation, are too apparent. Let me conclude with an illustrative anecdote—an object lesson. At school I always kept caterpillars; they were regularly fed, and seldom failed to come out in perfect condition. Once some "woolly bears" escaped; they were found after a few days, and again provided with ample food; but it was too late, they came out with only rudimentary wings.

But not only have we to provide the right subjects at the right time, we have to consider how the manner of teaching the same subject may be adapted to the age of the pupil. In an excellent Report on the Schools of St. Louis some years ago, Dr. Harris expounded the spiral system. In studying say botany in the lowest class, the children would learn to observe the forms of plant life, and become familiar with the main facts of classificatory botany, the observing power being chiefly called into action. Then the subject would be dropped, and taken up years after from the physiological point of view, when the learners would be able to understand the chemical changes, the process of development, etc., as they could not in earlier years. Similarly all Herbartians know how the teaching of history proceeds from the mythological story, through biography to history, and some of us have seen the bad results of giving little children formularies which have no meaning for them, instead of seeking to develop in them through the discipline of home, and Bible teaching regarding the lives of the good, feelings of filial trust and reverence and obedience. For examples of this I may refer to Miss Bremner's book on the *Education of Girls*.

In the accompanying time-table I have endeavoured

to make a double classification in reference to the subjects taught, and the age of the learners. In discussing it I shall continue to use the word faculty, in spite of Herbartian protests, meaning thereby the power of doing certain special acts, which vary in character. We have the power of directing our attention to the objects of sense, or of withdrawing it from these, and becoming conscious only of the working of our own mind; we have, *i.e.*, the faculty of observation and of reflection; by the use of the word faculty—etymologically, the power of doing—we need not dismember the Subject, but think of the One person as acting in different ways.

Part I., the humanities, should throughout the whole course be represented in all its branches; to it belong specially the *cultur-studien.* I think of some miserable starved specimens of girls I have known, fed upon an almost unmixed diet of either classics or mathematics; their physique had suffered, and they had no mental elasticity, their one idea being to win scholarships: they did this, but never flourished at the university, for want of all-round culture. Others I have known, who thought they could be high-class musicians by practising their fingers, without cultivating their minds; the results were lamentable; whereas those who gave half the time to music and half to *cultur-studien*, did more in the limited time. Is not the overwork of which many complain later, due to the too undivided work at one subject during the undergraduate period at the university? Mathematics relieves the strain of classics; specialising may be comparatively harmless to the full-grown man, but the child-specialist will grow up deformed.

Shall teaching be by class teachers or by specialists? Once every teacher was expected to take all the subjects with her class, now the tendency is towards specialisation. In junior classes the class mistress has many advantages over the specialist, for she knows what the children can do, the character and difficulties of each, and can adapt her teaching to her pupils. In any case she must exercise control over specialists, each of whom is inclined to think her subject the most important. She can get hold of children, and exercise a stronger influence than an occasional teacher, and the more subjects she teaches, the more intimate will be the relation to her pupils. On the other hand, it is not good for children to be shut up to one personality, though it is not well for them to be under too many, and there ought always to be one predominant; for this reason special arrangements are made in some boys' schools for a tutor to follow the boy's career all the way up the school. A class teacher too can correlate the different subjects, and make one help the other; being always at hand, she can give such help as is needed at odd times, to bring up laggards, and generally bring the intellectual to act upon the moral.

Class teachers and specialists.

On the other hand, a specialist can attain to greater excellence, throw more life into the subject, keep up with new discoveries and methods; the best plan is perhaps for the class teacher, at least in junior classes, to hear and help to bring home to her pupils the teaching of specialists; this is desirable with some foreign teachers, who fail to understand the exact difficulties of English children. It can, however, only be done when the staff is large. The case is different with upper

classes, which should be taught almost entirely by specialists, though there should be always some one person responsible for each class.

Head mistress.

There seems to be a great difference between the kind of influence and control exercised by a Head Master, and a Head Mistress. The government of a boys' school approaches more nearly to a republic, of a girls' school to a constitutional monarchy; whilst classes and teachers change for the child each year, the head mistress is permanent, and follows each through all the classes, knowing her in all her phases. She reads marks, gives encouragement and admonition, and is in immediate relation with the other controlling influences, parents and teachers. Then—owing possibly to the fact that many women have not degrees—the head mistress permits herself to criticise and advise her teachers in a way that no young master fresh from the Honour Schools would permit. "I hear you go and listen to your teachers," said the head of an Oxford College to me—his face, on my admitting it, expressed more than his words. Again, the head mistress considers herself responsible for good order in every class, whereas in boys' schools the entire responsibility seems to rest on the individual master; this must always be the case to a certain extent; head mistresses try to avoid indiscipline by insisting on the training of teachers, and resorting to various devices, *e.g.*, a junior teacher is made assistant to a senior, and entrusted with a class of her own, only when she has shown herself able; or—until she has well grasped the reins—she is set to teach in a large room in which there may be the head mistress and some other teacher capable of overawing

the restless; or if she is a specialist the class teacher may be in the room. If the class is insubordinate owing to the bad teaching they get, there is of course no alternative but to change the teacher, or to improve her.

Here let me touch on some of the chief perplexities of modern teachers. Professor Miall (*Thirty Years of Teaching*) writes: "No one can write on education without insisting on new subjects; and yet the old claims are not relaxed. We must have science in several branches, modern languages (more efficient than heretofore), drawing and gymnastics, but classics and mathematics and divinity must be kept up and improved. Increased hours are not to be thought of, fewer lessons, shorter lessons, and not so much home-work, are the cry. More potatoes to carry, and a smaller basket to carry them in. . . . I believe the problem is not an insoluble one after all." Economy of time.

The remedy, or perhaps I ought to say rather the mitigation of the teacher's difficulties, is to be found in four directions. (1) In increasing the number of school years. The well-trained kindergarten child comes with an interest in lessons, a power of attention, a considerable amount of knowledge, and a clear understanding of much that formerly children knew nothing about, so that we gain time at the beginning. (2) Then if girls come earlier to school and stay later, if we have a girl from eight to eighteen, we can give many things in succession, which we once had to attempt simultaneously, when girls came "to finish" in a year, or at most two years. (3) If the hours are shorter, we can get more work done than was the case when children were wearied out with long hours; when

I began my teaching life at Cheltenham, children came back sleepy for two hours of afternoon lessons, and returned to do home work, when they should have been in bed. (4) Better methods economise time, but this matter is so important that I shall insist on it at some length.

Economy of time in school.

(*a*) First let me beg a teacher to think how easy it is to waste half an hour in one minute. You have thirty girls before you and you say: "Now, girls, I am going to give you a lesson, and you must be very attentive," and so on for one minute. Let every teacher use as few words as possible. Let there be no preambles, no repetitions: "Now, my dear child, I wonder whether, if I asked, you would be able to tell me at once," etc. Let the question be direct. "As I have said just now," then do not say it again.

Wordiness must be avoided. We all know how wearisome it is to hear the same thing repeated in the same or different words. If we see this in a book, we skim; if it is done in lesson or lecture, we let our thoughts wander. Children do the same. I once heard a mistress of method recommend teachers to repeat themselves!

(*b*) Learn what not to say, *e.g.*, a name that you do not want remembered. I knew some boys who were set to learn the names of the "Do nothing" kings; the memory must not be loaded with useless luggage.

(*c*) In giving a dictation, some teachers will habitually repeat twice; the consequence is that many do not listen the first time, and a third repetition is often asked for. Let it be understood that the sentence will be given distinctly, and not repeated.

(*d*) In English dictations do not ask that every word should be written, but emphasise those required—"Each *separate* parcel was *received*". "I did not *perceive* his meaning." "He did not *succeed* in persuading her to *secede*."

(*e*) If a lesson has been set, we must ascertain that every one has learnt it, but there should be no questioning round and round a class. If a question and answer take one and a half minutes in a class of thirty, the whole time is gone, and the teacher has no distinct impression of which pupils have answered well; but if two questions in succession are asked of each and are promptly answered, the whole lesson may be considered to be known. Suppose there is a French dialogue to be heard, or an exercise has been learned, the teacher should not read the English; the sentences should all be numbered, the teacher call the number, and the child read the French from the English. The sentences in some books are not numbered, and some dialogue books are so printed, that the French cannot be covered; these are time-wasting books. A prompt reply must always be given; since we speak at the rate of over a hundred words in a minute, three children could say two short sentences each in half a minute. Thus a class of twenty could be heard in ten minutes, or if the class teacher is assisting, and takes half the class, five minutes only would be necessary, and time saved for oral composition, or reading exercises at sight, or training in pronunciation, etc. Some teachers, if unanswered, repeat a question. A girl who is not sure will often give an indistinct reply; one who does this robs her companions; the time of the class cannot be wasted thus, she must come in the afternoon and say it by herself;

it will generally be found that her vocal powers are improved by this exercise.

(*f*) In many subjects a so-called written *viva voce* may be properly substituted—say six questions written on the blackboard with numbers, the answers promptly written in class, the papers of different girls exchanged, the faults underlined and the name of the corrector signed. The answers can be quickly marked by the class teacher at home. This has been dwelt on in Miss Andrews' paper.

If French verbs have to be heard, table should be suspended, and the teacher point to a tense and a number. Here is a portion of one:—

	Sing.	*Plur.*
Indic. Pres.	1, 2, 3.	1, 2, 3.
Imperf.		
Passé défini, etc.		

Of course this rapid questioning is suitable only when we wish to ascertain whether a lesson has been learned, not to such *viva voces* as are dialectic, intended to elucidate a subject and make pupils think.

Note-taking should never be allowed in junior classes; a syllabus may in some cases be profitably supplied, or the lesson may be an amplification of a text-book which the pupils have read, or questions may be set calculated to bring out the main points of the lesson. It should be an *invariable rule* that *whatever is written* is looked over and corrected; if this is not done, we shall certainly get bad writing, slovenly work and general inaccuracy. Should this not be possible without over-working the staff, the *written* work of the

pupils must be diminished, or the number of teachers increased.

The work of correcting is not mere drudgery, and it is essential, not for the sake of the pupil only, but of the teacher. Without written exercises she may imagine she is teaching, whilst her pupils are not learning. A lesson she felt to be good, she will find perhaps has been ill-adapted to the class, and therefore relatively bad. She will find she has not emphasised the important matters, she has given a confused picture in which one fails to see the wood for the trees. There are no teachers like one's own pupils if one will learn of them: they convict us of disorder, inaccuracy, vagueness, etc.

Corrections.

It is important however that the teacher should be spared as much as possible unnecessary labour and waste of time. It is one of the most urgent duties of the head mistress to see that the teachers have not so much to do in the way of correcting, as to stupefy them, and deprive them of the time required for preparing lessons. The work of correcting should be reduced as far as practicable for the teacher, and made as profitable as possible for the pupil.

Suppose the teachers to be free after one o'clock, an hour may be given in the afternoon to correcting, and one in the evening. Language teachers, whose preparation is light, might do more, those who give lectures less; the work of correction must be fairly distributed, and a junior teacher trained to correct, by taking books first, and having these revised and given out in class, in her presence by a senior teacher.

Very strict rules must be made regarding the giving up of books at the right time by the pupils, and their

being returned punctually in class by the teacher with explanations and comments. The books should always be in uniform, and some rules, *e.g.*, respecting French being red, German, blue, etc., are very useful. Outside should be a label with the name of the pupil, the class and the boarding-house. This is important in the case of derelicts. All corrections should be made in red ink, and the exercise signed with the initials of the corrector.

Giving up books.

Suppose we have a foreign language exercise to be given out. The teacher should come into class with memoranda of faults which have commonly occurred, and mention these to the class generally. Faults of mere carelessness should have a special indication in the book of the offender, and need not be spoken of further to the class. Each pupil should, before writing the next exercise, divide the page, write on one side correctly the sentence in which the fault occurred, underlining the words that were wrong, but on no account writing the mistakes again, and on the other explain why it was wrong.

Giving out books.

When an arithmetic paper has been set the teacher may read out the answer, and each girl write W or R. The papers may be then collected, and it will only remain for the teacher to see whether the method was good. If not, she can write L W for "long way," give explanations at the next lesson, and have the sum done again. Slates should not be used, nor loose papers, for such exercises.

If the paper is an essay, or answers to questions, the teacher should make notes of the subjects in which the class generally has gone wrong, and explain these. She may select specimens of broken

figures, bad grammar, etc., but it is very profitable to read out good specimens ; it is a great help to us to see others succeed, when we have tried and failed, and there is nothing that many need more than a word of encouragement to make them feel able to try. One who has done well may be requested to enter good paragraphs in a book (what I think Dr. Kennedy called a "Golden Book") for the benefit of the class, and the worst writers desired to copy it ; this would have done them no good, had they not tried and failed, but afterwards it helps us much to see how well another can express what we could not. The teacher may herself write in the book of the most painstaking pupil, things which she has failed to make clear, and ask her to copy that into the aforesaid book ; it will do her good and help others. Certain conventional marks may be agreed on, *e.g.*, L would stand for wordiness, C P for commonplace, S for satisfactory, G for good, Fig. for broken metaphors, etc.

Diagrams and apparatus may be reckoned amongst time-saving things, but like ready-made toys these may be less profitable to children than very simple things, which they put together themselves, and the more they make for themselves, the more they appreciate and profit by the labours of others. Fergusson, lying on his back with a brown paper roll for a telescope, and watching the movement of the stars, learned more than many who are provided with an elaborate orery, and the Edgworths learned more about the reason of a rainbow from their glass of water, than many from the lens. As Miss Leonard has said in her paper, many things are not necessary in teaching elementary science, and it is a great

Apparatus.

pleasure to children to make anything for themselves. Here the kindergarten training will tell. For higher work well-equipped laboratories are good, but these are an expensive luxury, especially as new things are being constantly invented.

Physiological models are almost indispensable for class teaching, and excellent botanical ones are obtainable. A museum in which lessons can be given, and specimens referred to, is very desirable for natural science, but children should have their own private ones. Maps of physical geography should be constantly before the eye, but wall maps of political and historical geography cannot be so well seen; the teacher should be able to draw on the board or on paper, maps bringing out the special features of the lesson. It is understood that no class on history or geography is given without large maps both of space and time.[1]

Working models of pumps, archimedean screws, mechanical powers, and steam engines are within the reach of most, and some simple forms of orery. There is an inexpensive one with the world inside a glass globe, on which are engraved a few circles, and this removes the difficulty which most children feel on seeing a pair of globes.

Marks, reports, prizes, place-taking.

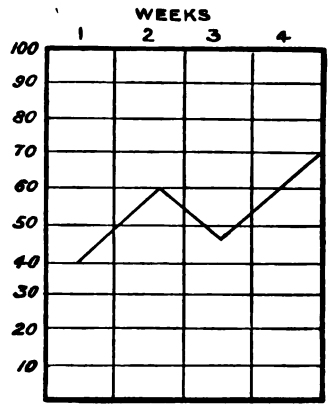
In former times when lessons were made less interesting, many ways were employed to keep up attention. Place-taking, by which each child took down all above her who failed to answer a particular question. This was most distracting; and so much depended on accident, that

[1] And here let me protest against the mischievous practice of having a round roller at the bottom, but a flat piece of wood at the top of maps. They are sure to be rolled on the latter and the map cut to pieces.

it was impossible by means of it to arrive at any trustworthy conclusions. Except for small children it has wholly gone out. The giving of counters has found more favour on the Continent, but this lends itself to barter, and anything which fosters the habit of considering what we can get by knowledge, is destructive of that calmness, that "wise passiveness" which is as necessary for mental, as for physical assimilation; it is equivalent to playing games, or running about during dinner-time. Some record there should be of each exercise, some "stock-taking" at intervals, and these intervals should for little ones be short, for time passes more slowly with them. If the head mistress each week looks over the mark-book in the presence of the class and the teacher, she is kept in touch with all, comes to know if there are girls who are wasting their time, and is able to give encouragement or reproof, and strengthen the hands of teachers. If there are a great number of lessons returned, she may find that a specialist is making unreasonable demands; she sees if corrections have been omitted by the teacher—in fact, notices things which, if left to the end of the term, might have resulted in considerable mischief. It is undesirable, however, to take up much of the teacher's time in adding up marks, and placing pupils in order of merit; it may be left to individual class teachers to do as they think best; there is no need in this for uniformity of practice, and it is always well to give every teacher as much liberty in following her own methods, as is consistent with the general management.

In language exercises the number of faults can be written at the end, and classified as mere careless ones, and those for which there is at least some excuse—

the former being counted double. In these and other exercises a maximum say of ten marks may be given; in many the teacher can give only a general estimate, but when returning books, she can show why she puts a higher estimate on one than on another. In junior classes the marks may be added, read with comments, and perhaps sent home each week. A sort of weather chart is used by us in the youngest classes—showing for each week whether they have risen or fallen in the number of marks.



Prizes, in part determined by work done at home, are dangerous, the temptation to get undue help is great; a conscientious child will reject such assistance as would be really good for her, lest she should gain an unfair advantage. Prizes given on the result of examinations, provided they are given not to the best, but to all who have attained a certain standard, are less objectionable; we cannot make it too clear that good may be better than best, and that the only praise we should desire is to hear: "She hath done what she could".

Public prize-givings seem to me very undesirable. A terminal report parents may reasonably look for, and words of blame or encouragement may be made very helpful to the child. Punishments in the shape of doubled lessons, lines, etc., are objectionable; if a duty has been neglected, or badly done, it has to be done at an inconvenient time—say in the afternoon. A fine may be required for untidiness and damage—in order to compensate others for trouble and expense, but to inflict a fine for breaking rules is altogether wrong. At a school I knew, where this was done, girls would deliberately break rules, *e.g.*, talk at prohibited times, and say they were going to have "three pennyworth". Into a matter of right and wrong, money cannot enter; so also conduct prizes should, I think, never be given; the proper reward for doing right is a good conscience, and the trust, friendship, respect of others.

Use of examinations.

Having lived through the pre-examination period, and seen the great evils which resulted from there being no test, I cannot join in the popular condemnation. There is no unmixed good, and many mistakes, which we learn to avoid later, are made when a system is new. I shall regard examinations only from the point of view of their value educationally. (1) They are useful as a test of what we really know; preparation for them enables us to find out what are our permanent possessions; (2) competitive examination compels us to set these in order, and estimate their relative importance. (3) Examinations tend to produce presence of mind, mental self-control, (4) to suppress wordiness and abolish a florid style, and (5) to make us feel the supreme importance of clearness and accuracy.

Examining is a difficult art, and examiners have to learn their *métier*. All are not perfect; the process of reading papers is exhausting, and after reading ninety-nine, an examiner may fail to appreciate the exquisite thought and philosophic insight of the hundredth. It is possible he may form an erroneous opinion regarding some unusual performance—there have been reviewers who failed to appreciate the early volumes of Wordsworth, Tennyson and Browning; there are examiners, however, really sympathetic, laborious, and anxious to see what has been done (which is limited) rather than find out what has not been done (which is unlimited), and these may give much help both by their criticisms and their encouragement. It is good for all of us to have our work tested by a competent critic.

An internal examination, if well conducted, is most valuable, as it can better follow the work, but on the other hand, many teachers feel that an internal examination places them too much at the mercy of caprice, or personal feeling, and hence prefer a central one, such as the University Locals.

Regular attendance.

Schools must insist on punctuality in returning, and no unnecessary absences should be allowed. Children who are absent cannot follow the teaching in the next lesson, and laggards demoralise the class and distract the teacher, who feels she is not understood.

Rapport with the class.

In conclusion let me say the teacher must have the power of holding the class. She must be sensitive to the least inattention, quick to discern whether it is her fault or that of the pupil, and take her measures accordingly, acting always upon the wholesome maxim (which should never be

heard outside the common room), certainly never whispered to parents, that it is always the teacher's fault, if pupils do not learn. When she fails to establish the rapport between herself and her class, she must try to discover the cause of her failure. Young children, like wild animals, are tamed by the eye, and a class is controlled by a teacher who sees everything that goes on. If a teacher when using the board turns away and writes in silence, a restless child is almost sure to play some amusing trick, and it may take a considerable time to recover attention. If experiments are performed, the teacher, like the conjurer, should never cease talking or questioning. If she cannot manage to do both, she must have an assistant.

Dress, manner, etc.

She must avoid awkward tricks. I knew two very distinguished teachers whose lectures were admirable, but one had a habit of pulling a tuft of hair, and another would stuff his handkerchief carefully into his folded hand, and then draw it out again—to the great distraction of the class. We have all heard of the parliamentary orator and his button.

A study of the *Pedagogical Seminary* for August, 1897, would be profitable to teachers careless about externals. The article is called "A Study in Morals". The question was put in writing and answered by twenty-three boys and one hundred and sixty girls: "Reflect which teachers, from kindergarten to college, you have liked best, and been influenced most by, and try to state wherein the influence was felt. Account if you can for the exceptional influence of that particular teacher. Was it connected with dress, manner, voice, looks, bearing, learning, religious activity, etc.? Four out of five mentioned the manner of the teacher

as exerting an influence. One in three speaks of the voice, one in four speaks of dress." These externals, as we are apt to call them, are the outcome of the personality, or they would not exert influence. We must therefore so order our inner being that manner, voice, dress, should express self-respect and unselfishness, right feeling, love of order, good taste.

If I were writing a treatise on psychology, I might insist on the teacher's gaining an insight into the contents of the child's mind—what Herbart calls apperception-masses, but in this short introduction I can only touch on the subject. I subjoin a short list of books not too difficult for teachers. I conclude with a few common rules derived from psychological observation and a few practical hints for the schoolroom.

A FEW PRACTICAL PRECEPTS.

THIS is not a treatise on psychology but a practical hand-book for young teachers. Before entering on the special subjects, it may be well to say something of the application of the principles which are familiar to all who are trained, and dwell upon a few of the most important.

(1) There is the fundamental precept, *awaken interest.* Have you seen the Medusa spreading its tentacles idly on the waves? Have you watched the change as it fastens on its prey? So does the mind grasp that which is suitable for its nourishment. As the intelligence of the child awakens, it no longer perceives in the lazy, dreamy way in which the infant is conscious of a light; it apperceives, takes into itself the object, the word, the thought, and grows thereby.

(2) *Avoid distractions.* The senses and the mind must be fixed on the subject of instruction. When a bird is to be taught to speak, he is placed in a dark room, shielded from the distractions of sight, until the words are acquired, then the use of other senses than hearing is permitted; so little children require more quietness and isolation than older ones.

Distractions are not all of sense. The mind is distracted by fear. How dreadful are the old pictures of the dame, teaching rod in hand, or the master with his cane; some may remember the music teacher ready to rap the knuckles, and know how all sense of harmony was

destroyed. And it is so also with the seeking of rewards. I hope place-taking and prizes and scholarships will one day follow the rod and the cane, and children be led from their earliest years to feel, what is really natural to them, that knowledge is in itself a pleasure and a good.

(3) *Proceed from the known to the unknown.* Observe the laws of association; for this a teacher must be in *intellectual sympathy* with her pupils—know and feel by an inner sense, when mind is responding to mind. I have heard some so-called teachers, who spoke like a book, who were lecturers; they saw their own thoughts, but not those of their pupils, and were therefore unable to lead them on. *E.g.*, if a sum was wrong, they would say, "Do it thus," instead of inquiring into the cause of the mistake. In questioning they would not try to see into the child's mind.

It is more difficult to enter into intellectual sympathy with very little ones, hence we need specially able teachers for them. It is also better for class teachers not to change too often, as it takes time to get into sympathy with a new class. Of course specialists have to do this; it is one reason why *cæteris paribus* they are less successful than class teachers.

(4) Proceed in classifying by noticing first the likenesses, then the differences—in other words, proceed from the genus to the species. There are some excellent chapters on this in Rosmini's *Method of Education*, translated by Mrs. Grey, p. 15.

(5) *Make lessons pleasant.* This does not imply that the act of learning should be always easy or amusing. Children like to feel they are making progress, and a teacher wearies them who is always trying to be amusing, but does not really get them

on. Porridge has a very plain taste, but for every-day fare even children prefer it to tarts for breakfast. A London confectioner was asked, if he did not find the many boys he employed make depredations. "No," he said, "when first they come I tell them they may eat what they like; in a few days they make themselves sick and eat no more." There was a book called the *Decoy*, a story mixed with conversations on grammar; children always managed to get the story without the grammar. They like sums and history for regular meals, fairy tales for dessert.

(6) *Teaching must be adapted to the mental state of the pupil, and be just a little above his unassisted intelligence.* It is a worse fault to teach below than above the powers of the child. I shall never forget my indignation at having a book given me, which was below my powers, nor the stimulus of trying to do what was hard. One who was afterwards a distinguished teacher, told me how the Maurice lectures helped him, by making him feel there were regions of thought on which he had not yet entered. Knowledge quite within reach does not promote progress. A friend who had a night school was told by its members, "We want to be taught something as we can't understand". They meant something they could not learn without help; they wanted to overcome difficulties.

(7) *Form right habits.* We should as far as possible prevent the making of mistakes even once. A child when reading the Bible miscalled the word patriarch, reading it partridge; when an old man, he never saw the word without recalling his error. Hence we should not give children misspelt words, or bad grammar to correct, or let them write exercises be-

fore the ear has been cultivated to know what is right. I knew a music master who would anticipate mistakes, and stop the pupil, saying: "You shall not play that wrong note".

On the other hand each repetition of a right action makes it easier, and the prime work of the educator is to form right habits; these should become instinctive, and so set free thought for ever higher and more perfect performance.

(8) *Awaken and sustain the spirit of inquiry.* We need, however, to be very careful not to ask questions, which the child cannot possibly answer. This encourages mere guessing, and the habit of deciding upon insufficient data. We should question the pupils, and build on their knowledge, but as they get older the *viva voce* questioning may be overdone—and for the highest classes it would be simply a distraction. For these it is well to give questions to be thought out, and answered in writing. Pascal's father shut him up alone to find out the translation of a classical author; there are so many helps now, that people rely upon them when they might gain vigour by grappling with difficulties. No intellectual habit is more essential than the habit of patient, sustained inquiry, that described by Newton when he said: "I keep the subject of my inquiry continually before me, till the first dawning opens gradually by little and little to the perfect day".

(9) *Foster intellectual ambition.* Help the child to feel the joy of surmounting difficulties, of climbing the heights. This invigorates the intellectual life. Some can remember how, *e.g.*, they grappled with the dull work of early mathematical study, that they might one day learn to solve the problems of astronomy, or went

through the labour of learning irregular verbs, that they might read the poetry and philosophy of Greece.

(10) *Put before pupils the highest ideals which they can appropriate.* These are not the same at each stage of development. The little child desires first to have something, and this is not wrong. Later it feels more the need of love, of approbation, and this is a legitimate and right motive; it is generally his best guide, until he can exercise himself, irrespective of the outward voice, to have a "conscience void of offence". We have to teach him to discriminate voices which are in harmony with, from those in discord from, that inward voice, and to make this ultimately his supreme law.

(11) *The ultimate ideal or final cause should be implied in all that we teach, viz.*, the attainment of the perfect development of the individual, through bringing each into harmony with the environment, the universal, and thereby on the other hand helping to perfect the whole. For this, wisdom and self-denial and sympathy with the noblest and the best are to be sought, and above all with the One, the Infinite Wisdom revealed in Nature, in the world of thinking beings and in the self-conscious mind. All should feel in their inmost soul what Milton has expressed:—

> How charming is Divine philosophy,
> Not harsh and crabbed as dull fools suppose,
> But musical as is Apollo's lute,
> And a perpetual feast of nectared sweets,
> Where no dull surfeit reigns.

Name of Work.	Author.	Pages.	Price.	Publisher.	Remarks.
Psychological Foundations	W. Harris .	400	6s.	Appleton . .	An excellent book by the Commissioner of Education, U.S.A., showing the correlation of the Philosophy of Education with Psychology and Ethics.
Philosophy of Education	Rosenkranz .	280	6s.	Appleton . .	Well translated. Notes by Dr. Harris add much to its value.
Handbook of Psychology .	Sully . .	400	6s. 6d.	Longmans	
Education of Man . .	Fröbel . .	330	6s.	Appleton . .	Well translated by Hailmann.
Educational Laws . .	Hughes . .	300	6s.	Arnold . . .	Should be read by all teachers. A very clear exposition of the ideas of Fröbel and other reformers.
Pedagogy of Herbart .	Ufer . .	120	2s. 6d.	Isbister . . .	Not too difficult for beginners.
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Herbart's ABC of Sense-Perception	Eckhoff . .	300	6s.	Appleton . .	Not an easy book. Gives much insight into Herbart's theories and practice, especially in mathematics.
Application of Psychology to Education	Mulliner . .	360	4s. 6d.	Sonnenschein .	Introduction gives a full exposition of Herbart's psychology.
Apperception . . .	Lange . .	120		Isbister . . .	Very clear. Suitable for beginners. On Herbartian lines.
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Educational Theories .	Oscar Browning	192	3s. 6d.		
Elementary Psychology .	Baldwin . .	300		Appleton . .	Very systematic. Not a book for the general reader, but for the serious student. Many good diagrams.

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Psychology Applied to Education	Compayré .	220	3s. 6d.	Isbister . . .	Useful and well arranged.
Education as a Science .	Bain . .	450	5s.	Kegan Paul .	Contains much of value to teachers. With a good deal the editor is not in sympathy.
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L'Education des Femmes	Greard . .	300		Hachette . .	A very interesting book.
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L'Education Progressive .	Necker de Saussure . .		7s.		Three vols. A mine of original observation. Rosmini depends much on it.
Home Education . .	Mason . .		3s. 6d.	Kegan Paul . .	A very helpful book for parents and teachers.
Lectures on Teaching .	Fitch . .	430	5s.	Camb. Univ. Press	Should be in the hands of all teachers.
Teaching and Organisation	Barnett . .	420	6s. 6d.	Longmans . .	A very valuable book. Contains 23 papers on different subjects.
Aims and Practice of Teaching	Spenser . .	280		Camb. Univ. Press	Very good. Contains 12 papers by various writers. An excellent one on modern languages by the editor.
Thirty Years of Teaching .	Miall . .	250	3s. 6d.	Macmillan . .	A series of brightly-written practical essays, which all teachers may read with pleasure and profit.
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PART I. HUMANITIES.

ENGLISH LANGUAGE GENERALLY—READING, WRITING, GRAMMAR, COMPOSITION.

By DOROTHEA BEALE.

I PROPOSE to treat in order of the different subjects of our school curriculum. The first of these is language generally.

Reading.

As a branch of formal instruction, we begin with reading. A more aggravating subject of dispute can hardly be found than that which relates to the teaching of reading. The pure Fröbellian will have none of it before the child is seven years old, and occasionally children do come to school unable to read, but with the senses awakened to all sorts of other relations except that of articulate sounds to written forms. In spite of the reproaches of those who build the sepulchres of the prophets, we teach reading when a child seems ready for it, and maintain that the principles of Fröbel are best carried out when we improve on his methods, and adapt ourselves to new circumstances; we urge that the children from intellectual homes are different from the class of children with whom he had most to do.

When begun.

I would not press reading upon infants, nor require the close and continuous attention that reading implies, but as soon as the appetite for any special kind of knowledge is shown, we may conclude,

on Fröbellian principles, that the child is fit for it. Our order is: (1) drawing, (2) writing, (3) reading.

The kindergarten child has learned to draw lines, straight and curved, developing into simple objects and curious patterns—rude picture-writing, it may be called. We lead on to writing in some such way as this. First lessons.

"How did men at first send silent messages to one another when they were far off? If you wanted a doll, you might draw a picture of one and send it to mother on your birthday. A man might make a picture of a fish, and send it to a fisherman with a piece of money, and the fisherman would understand; or one might want to sell a sheep, and send a picture to his neighbour; this would be easier than sending the sheep. In fact, the first letter of the alphabet is a rude picture of the head of an ox, A. People were not particular, as we see on old monuments, which way the letter stood, and so we have it sometimes topsy-turvy, sometimes sideways, ⋖; this is like a Greek alpha, Α, α. Beth in Hebrew was a dwelling, two tents ΔΔ, Gimel Γ, the camel's head and long neck. Delta Δ, a door. Kappa K, a bird with its wings out. Rho P, a man's head. But with pictures only it is hard to make sentences; *e.g.*, if you wanted to say, "I have found some water," you might draw ∼, but you would have to find some way of showing whether you meant 'I have' or 'I want'; and if somebody sent you the picture of a man walking, you might not know whether you were expected to come or to go. It is hard to represent verbs by pictures, though it is so easy in speaking." Alphabet.

Some pictures of Egyptian hieroglyphics and expla-

nations will here be found to interest children much—part of their drawing lesson might be to copy a hieroglyph alphabet. Then we might enlarge on the need for words to tell people what to do. Baby says "mamma," "doll," "puss," but it wants also to say "come," "give," "go," and this cannot be pictured, so people seem to have tried to represent sounds by drawing a picture of the mouth making the different sounds.

I suppose the first sound most babies make is a sort of mumbling, and if they open their mouths we get a sound like *ma;* now in all languages *ma* stands for mother, with some slight alterations. What is M like? Is it not much like a mouth shut up? and suppose you add a round shape to represent an open mouth you would get something like picture-writing *ma*. You might put the two side by side, a picture of a woman and *ma*—the Egyptians often had the two signs. The next easy sound is *pa*, and this stands in all languages that I know, for father. How could this be written? If you say *ap* you will notice a movement of the lips, which open with a sort of bursting sound. We may represent that movement by a stroke and put a round after it to stand for the open mouth P. There is another sound very like P, but not quite so sharply said. We hear it in *ab*. We can make the stroke as before, and put the loop lower down, to show that *ba* is a quieter sound than *pa*—so shorthand writers make a long stroke for the *b* and a short one for *p* (| *b* | *p*) and put no loop.

Thus we get three lip letters, but we can shut up the mouth in the middle—half shut it and we get *n*, which is half *m*. The breath will have to come of course through the nose. We can move the tongue

suddenly from the teeth and get *d* as in *ad*, and write a stroke as before, but put a loop representing the open mouth behind it; the sound nearest to it which we hear in *at* would have the loop at the top, ɋ, as we had in *pa*, but in our alphabet the loop has disappeared and we have only *t*. In shorthand we write a long horizontal stroke for *d* and a short one for *t*. Thus we have three dentals.

We may also shut up the throat and let the breath go through the nose, as in *sing*, or we may make the sudden movement quite in the throat. We could take the bird shape but think of the two strokes as if pointing down the throat in **K**, and for the softer sound only one pointer **T**, this was the Greek G. We make it rounder at the bottom now. For the first of the throat sounds we have no single letter, but we write an *n* to show it is a nose letter, and a *g* to show the shutting up is to be done in the throat.

So now you see we have got nine letters—three made with the lips, three with the tongue near the middle of the mouth, three in the throat. Three are made by sending the breath through the nose, three are made by a sudden opening and sending the breath through it with force, and three by sending the breath more gently. The names given to these different sorts of letters I may now give and the shorthand signs:—[1]

	Nasals.	*Hard.*	*Soft.*
Lip letters - - -	m ⌒	p |	b |
Tooth letters - -	n ⌒	t —	d —
Throat letters -	ng ⌒	k ⌣	g ∪

Reading books published by A. Chrysogon Beale

[1] I give the characters of the script, which is much simpler for children than Pitman's.

(Sonnenschein) are perhaps the best for beginners. There are coloured pictures of the mouth; the deaf alphabet is given, and the words which are not written phonetically are gradually introduced. Sonnenschein's books are also good, and Miss Soames' *Introduction to Phonetics*.

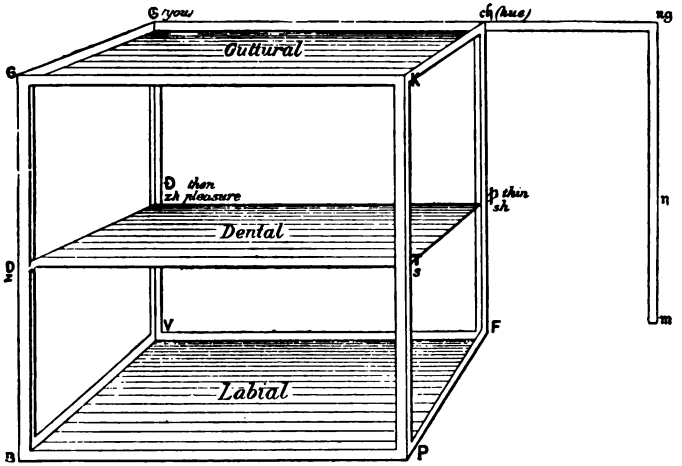
Thus the child could be taught to observe the movements for articulation, be interested in early writings, and prepared to look intelligently at ancient monuments.

In teaching, the sounds of the letters will be given of course, not their names, and the alphabet will be from the first classified, and a basis laid for philological study. A shorthand alphabet will be learned side by side without trouble, and besides this, the pronunciation will be improved—all this without any over-pressure or giving any instructions unsuited for a small child.

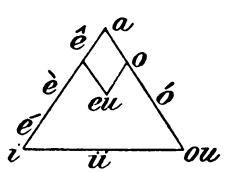
In a later lesson the meaning of an aspirate should be explained, and added to each of the mutes; we then get four varieties under the heads of labial, dental and guttural. The sibilants, which are in some respects aspirates, may be classified, and the feeble lip aspirate in *when* (written in old English *hwen*) should be noticed. The relation of palatals *l* and *r*, and the different kinds of palatals, may be dwelt on.

I give a comprehensive table, founded on one in Professor Key's volume on the alphabet. The three horizontal planes give gutturals, dentals and labials. The front plane the sharp mutes, the back the flat mutes; the right plane the sharp aspirates, the left the flat aspirates; the sibilants are classed as dental aspirates and the nasals appended.

Other classifications are noticed in the paper on Spelling Reform.



The classification of vowels is more difficult, and it may be pointed out how easily these pass into one another. How difficult it is too for English people to sustain a pure vowel, *o*, without passing into *u*, *a* into *ai*. The vocal triangle as given in Brachet's dictionary, adapted from Helmholtz and Brücke, is perhaps most easily understood.



For those who do not use the alphabet of the *maître phonétique*, tables such as those of Larousse should be

always at hand to hang on the wall, when French lessons are given. These tables enable one to draw attention to sounds which English people do not discriminate, or which offer special difficulty, *e.g.*, *ê*, *è*, *é*, *ais*, *ai*, *ou*, *u*, *eu*, *e*; to the feebly nasalised vowels as in French *pain*, pronounced Anglice, *pang*; to the formation of the sound constantly changed by English people into *ou*, when a vowel follows, *e.g.*, *loui* for *lui*; to the proper pronunciation of *moi*, *mwa*, not *mwau*; to the addition of a syllable, as in *deer* for *di+r*; to the attractive power of labial consonants, making *impossible inpossible*, and so on. Systematic teaching saves much time.

For older pupils it is an instructive and amusing exercise to work out the combinations of two vowels to produce a multitude of mixed or diphthongal forms; such an exercise will do much to teach delicate discrimination of sounds, and it is important early to cultivate the ear and the vocal organs. I append the diphthong table—to read it proceed from one vowel to another, following the arrow head.

Interchange of letters.

The classification of letters is of the greatest importance as the basis of linguistic study, and so the matter should early be made interesting and intelligible, not only for the sake of pronunciation, but as accounting for, and simplifying a great many rules of grammar, and enabling pupils to acquire quickly a large vocabulary, when they begin foreign tongues, by observing such laws as are expounded by Grimm and Verner, and thus helping them later to recognise that there is such a thing as a science of language, something more than a wearisome list of empirical rules and unreasonable excep-

tions. Thus reading, if taught as it should be, conforms to the psychological principles (1) that we should develop the powers of observation, (2) let the child do or make something, (3) show the uses of what is produced, (4) plant some root principles which may grow up and bear fruit in later studies, (5) associate the different studies with one another. The reason why

teaching is often so dull, is that teachers do not take a large view of the field of instruction, but work like day-labourers, and adopt that fatal maxim, you should "throw it all off, out of school hours". "I am a gentleman after four o'clock," said a schoolmaster! Now I should like those who are going to teach the alphabet

to read Max Müller's *Science of Thought* in their leisure hours. It is too ponderous a volume to buy—660 pages—but it should be in the Teachers' Library. There is a most interesting chapter on the origin of roots, which he traces to imperatives. I need hardly say that the two volumes of *Lectures on Language* should be familiar to all, and that the teacher should work out roots for herself after the model of "Mar". She must not, however, bury the important things under a mass of erudition; the larger her store the more should she be able to select by the discursive faculty (I ask pardon of Herbart) what is most illustrative of her subject for the special class: it is very important to know what not to say.

Melville Bell's *Visible Speech* is very instructive reading, and all should be familiar with *Le Mestr.: Fonetiq* of Paul Passy. I abstain from recommending some of the very learned books "made in Germany". These are not suited to persons of limited leisure, but are rather for the Grammarian who said:—

> Let me know all! Prate not of most or least,
> Painful or easy,
> Even to the crumbs, I'd fain eat up the feast,
> Ay, nor feel queasy.

If reading is begun early, taught in the way suggested, and the sounds insisted on, to the exclusion of the absurd spelling, which pretends to produce cat from *see ay tee*, children seem to get on slowly at first, but the progress is rapid, when they have once mastered the signs, *i.e.*, as rapid as is possible with our cacography.

In an excursus I have insisted on the great importance of reformed spelling. It is difficult to get people

Psychology	Kirchner	350		Sonnenschein	A very thorough book, suitable for those who have some knowledge of philosophy.
Psychology Applied to Education	Compayré	220	3s. 6d.	Isbister	Useful and well arranged.
Education as a Science	Bain	450	5s.	Kegan Paul	Contains much of value to teachers. With a good deal the editor is not in sympathy.
Education	Herbert Spencer	170	2s. 6d.	Williams & Norgate	
L'Education des Femmes	Greard	300		Hachette	A very interesting book.
Rousseau's Emile Extracts	Worthington	160	3s. 6d.	Heath	
Les Pères et les Fils	Legouvé	350	3s.	Hetzel	Short chapters giving in the narrative form the way a father deals with his son. Delightful reading.
Hist. Critique des doctrines de l'Education	Compayré	500		Hachette	Several volumes. Very judicious and interesting.
Educational Reformers	Quick	330		Longmans	Very good.
L'Education Progressive	Necker de Saussure		7s.		Three vols. A mine of original observation. Rosmini depends much on it.
Home Education	Mason		3s. 6d.	Kegan Paul	A very helpful book for parents and teachers.
Lectures on Teaching	Fitch	430	5s.	Camb. Univ. Press	Should be in the hands of all teachers.
Teaching and Organisation	Barnett	420	6s. 6d.	Longmans	A very valuable book. Contains 23 papers on different subjects.
Aims and Practice of Teaching	Spenser	280		Camb. Univ. Press	Very good. Contains 12 papers by various writers. An excellent one on modern languages by the editor.
Thirty Years of Teaching	Miall	250	3s. 6d.	Macmillan	A series of brightly-written practical essays, which all teachers may read with pleasure and profit.
School and Home Life	Rooper	480	1s.	Brown	Original and suggestive.
Educative Psychological Foundations	Holman	530	6s.	Isbister	Not too difficult for beginners.
Teaching and Teachers	Trumbull	400		Hodder	
Religious Teaching	Bell	180	2s. 6d.	Macmillan	A very good book.

The Bureau of Education, U.S.A., issues valuable reports each year, which are presented to the Teachers' Guild and a few favoured places. They always contain a great deal of interesting matter.

The *Pedagogical Seminary*, edited by Dr. Stanley Hall, should be studied by all who desire to keep in touch with the new scientific methods. No. for Aug., 1897. is specially good.

pupils, as Professor Meiklejohn's *Expressive Reading*. There are some good remarks in a brief paper by Mr. Burrell in Barnett's *Teaching and Organisation*, and I may draw attention to page 131 of Spenser's chapters on *Teaching*, for all these books should be in the Teachers' Library.

From the first, children should learn poetry by heart—poetry suited to their understanding. A child was heard to drone forth :—

> Save that from yonder ivy-mantled tower
> The lowing herd doth to the moon complain.

The reflections of the poet were utterly uninteresting to him ; he did not perceive the absurdity of cows ascending a tower.

I cannot sufficiently deprecate the setting of melodramatic pieces chosen not for their intrinsic beauty, but to show the power of execution—to borrow a musical term. The pieces learned need not be all poetry. Some of Hans Andersen's Mährchen are excellent. Scenes in which several can take part help to give animation.

Learning by heart.

Throughout their school life children should continue to store their memory, during the years in which it is easy to learn, with masterpieces in prose and poetry ; because learning by heart was formerly overdone it is much neglected now. These early acquisitions are a treasure all one's life. Familiarity with really good writers is the first thing necessary for writing well ; it is good to let children write from memory passages learned instead of giving dictation.

Recitation.

Looking at the higher aspects, I can hardly exaggerate the importance of getting children to speak with the understanding and right

expression; for this teachers must make them enter into the meaning of the writer, realising the imagery, the feelings, the thoughts; this calls out right emotion, and thus elocution becomes of no small value as a part of moral training. Plato dwells much on the influence for good or evil upon the actor who realises the character he represents, and as Aristotle has said that through the drama one may purify the soul, so we may help our pupils to feel all the grand music of our great poets, and to enter with fuller sympathy into the teaching of the sacred scriptures of the world.

There is an excellent article in the volume of *Special Reports* issued by the Education Office by Mr. Dale of Merton College, from which I give extracts.

"Before the reading of Geibel's poem on Frederick Barbarossa (the story of the sleeping kaiser who wakes to grasp the sceptre once more) a scholar was bidden to relate the fairy tale of the sleeping princess.

"The analysis of the piece into sections was given, each with a brief title indicating its subject-matter, and the exposition of their relation to one another, showing it had a distinct purpose and value."

Oral composition.

The practice of composition may begin systematically in quite early years. Mr. Dale has given an interesting account of the way in which children are taught orally, and one who attended a Ferien-Kursus at Jena has explained the matter fully to me. First, the teacher always insisted upon answers to questions being complete sentences. I quote once more from Mr. Dale, but the whole article should be read.

"The first division of the subject in the German code is 'exercises in *speaking*'; and the careful and admirable training in oral expression is worthy of special attention. It is of frequent occurrence to hear a boy when called upon for an answer speak with but little hesitation for two or three minutes, using grammatical and connected language, and displaying a vocabulary which might have been supposed to be too wide for any but adults. This result is the working, primarily, of a principle which has always lain deep in the German conception of teaching, and which has been reinforced by the influence of Herbart and his followers, that in every lesson the child should take an active part. It is given as a precept to every seminar student, 'Let the teacher speak little, the children much'.

"The teaching of composition is one of the most valuable parts of the work done in the German schools. It is begun at a very early age and practised steadily throughout the course.

"The composition is conducted by word of mouth. 'Who,' asks the teacher, 'can give me a sentence to begin the first section?' One is suggested, and criticised. 'Can any one else give me a better?' The others then suggest, if necessary with a little help, their variants, and finally one version is accepted. In the case of the youngest children this is written on the blackboard. The same process is pursued with each section till the piece is finished. With the older boys the blackboard is not used, save for the titles indicating the outline of each section. The class then writes it out from memory.

"The fundamental presupposition of this method is the inability of young pupils to compose and think

out a series of ideas without much assistance, even though the subject be a familiar one. Their thoughts need concentration and guidance, and this help is given them by the working out of the matter in class. Yet individual liberty of expression is by no means sacrificed. The sentences are the children's own, and for the purpose of good composition the oral method is invaluable. It proceeds on the sound principle that a child should be taught to test style by the ear and not by the eye alone. It makes short work of a lumbering period.

"On the other hand, the activity and interest of every scholar are kept up by the desire to improve on his fellows, and to have his own version accepted. Constant practice, moreover, is gained in the art of finding synonyms, and it affords an admirable opportunity of instruction in grammar and orthography. Indeed, the practising school at Jena, following a suggestion of Professor Ziller, removes grammatical explanations altogether from the reading piece, and transfers them to the child's own composition, an expedient which avoids the fault of defacing the beauty and unity of a poem by picking it to pieces for the sake of illustration."

Sometimes a picture is used to form a subject of conversation, questioning and explanation. Thus is the valuable power of oral composition formed, a good vocabulary obtained, taste cultivated, and that respect for the mother tongue which is so sadly wanting in many English people. Children gain a facility in writing which no dissection into different clauses, enlargements of predicates, etc., can give. Rules are introduced with the reasons for such rules, and only

at last a grammar is placed in the pupil's hands—even as a Euclid is given when it is all known. I have heard a small kindergarten boy stand up and give in a clear and quiet way quite a long story which he had studied. The habit of accurate expression will thus be formed and the thought become clear, for it is language alone which gives form and body to thought —gives it "a local habitation to a name".

In the higher schools, Mr. Dale writes, the practice of oral composition is continued (p. 573):—

"The practice of oral paraphrase which we saw existing in the elementary schools here reaches its climax. The scholars are bidden to prepare a scene or passage of some author, or to read up some period of literary history at home. The next morning, before the lesson begins, one of them is called upon to give a summary of what he has read, a sort of short essay by word of mouth—lasting three or four minutes, and sometimes even longer. The correctness both of style and matter, with which this difficult task is performed, needs to be heard in order to be fully appreciated at its true value. It combines many of the advantages gained from a debating society with those of an essay. It cultivates readiness of speech and thought, while, like an essay, by enabling the teacher to gauge the points on which interest has centred, it lends him a proper starting-place for his lecture."

This oral composition tells very advantageously upon the written work, and could be introduced more generally into English schools; but from quite early years children should be accustomed to write answers to questions upon their lessons, or to tell something that they know. Later, subjects may be given to be

thought out or a *résumé* given of a lesson; and lastly the pupils of the higher class required to read up a subject, and write upon it, or compose an essay.

Grammar taught inductively.

As regards the formal teaching of English grammar, I shall say but little. I may instead refer my readers to the long and interesting paper by Dr. Abbott in the volume edited by Mr. Barnett, and to his book, *How to Tell the Parts of Speech*. The system he recommends will form a good foundation for the acquisition of foreign tongues. Pupils are led to make their own definitions, and in part their own grammar. A class thus taught French by our present Mistress of Method were astonished and delighted to find they knew already the chief rules of their French grammar, when at length it was placed in their hands. It is impossible and unnecessary to insist upon all grammatical forms being obtained inductively; life is too short to carry it out in all its details, and so the tabulation and learning of various paradigms becomes necessary; but pupils should learn to form them. I am sure there is much less use in the old-fashioned parsing exercises than is generally supposed; parsing becomes mechanical; nine-tenths of what they have to write children know, and need not think about, and when sentences are given to parse, certain words only should be underlined for parsing. I first questioned its usefulness when I found at school that one who was so dull, that we used to regard her as somewhat of an idiot, always came to the top when we took places for parsing. What the French call *analyse logique*—classifying all words and phrases according to their function in the sentence—is valuable.

Logical and grammatical analysis.

Mr. Blakiston in his *School Management* endorses this view, and recommends the teaching of logical even before grammatical parsing. Mr. Fearon in *School Inspection* writes: "What is wanted is to get as quickly as possible a notion of the structure of the sentence, and the logical relation of its parts. The teaching of English should be based on the analysis of sentences. Some may think the teaching of English grammar by means of logical analysis more difficult than the old method. I am perfectly convinced from observation and experience, both as a teacher and as an inspector, that this is not the case. They are not more difficult than the terms which it is necessary to use in teaching grammar on the old system. The great point is to make children have an intelligent understanding of the real things which underlie them and which they represent."

Professor Woodward (*Monographs on Education*) writes: "There is need of preparatory drill in forms and language study, to bring a child to the intelligent study of construction, but this done, the analytical method of sentence-study commends itself. Intelligence is called into play, for the pupil is no longer studying words as words, but as the expression of thought; memory is subordinate and reason to the front—nouns, verbs, etc., are in some languages stamped with distinguishing marks, and can be recognised by their forms, but in English the power of any word and its influence in the sentence are rarely dependent on its form; the part of speech cannot be determined at sight, but by its connection and dependency."

The analysis of sentences is of course very important in the study of foreign languages. Hosts of rules about

conjunctions, governing moods, etc., can be discarded if once children can recognise a dependent sentence. Various models of analysis are given in all good grammars. Here is a form which has many recommendations as showing clearly the structure of a complex sentence :—

Sentence.	*Dependent.*		*Principal.*
1 The man			subject of 5
2 who	subj. of 3	adjective	
3 wrote	pred. of 2		extension of 1
4 that letter	obj. of 3		
5 said			predicate of 1
6 that	conj.		
7 he	subj. of 8	substantive	
8 would return	pred. of 7		object of 5
9 but	conj.		
10 he			subj. of 11
11 did not			pred. of 10

Another matter which should have great attention is the use of tenses. There is nothing perhaps so difficult for foreigners to acquire as the power of discriminating tenses. Owing to the want of the present and future imperfect in French verbs, many children get an idea that imperfect means past, and few know until they learn Greek that "I have written" is a present tense. Such a table as this can be used to contrast languages :—

	Indefinite.	*Imperfect.*	*Perfect.*
Present	I write	am writing	have written
Past	Wrote	was writing	had written
Future	Shall write	shall be writing	shall have written

The authors of the Parallel Grammar Series have sought to reduce the time occupied in learning grammar. In one book the general rules only need be given, and the variations from these rules appear in other grammars. Thus the tiresome repetitions in each grammar of the letters of the alphabet—the definitions of the parts of speech of many rules regarding concords —could appear once for all.

Let me in conclusion quote a portion of the resolutions concerning the teaching of English passed by the Conference called by the Committee of Ten.[1]

"The main direct object of the teaching of English in schools is (1) to enable the pupil to understand the expressed thoughts of others and to give expression to thoughts of his own; and (2) to cultivate a taste for reading, to give the pupil some acquaintance with good literature, and to furnish him with the means of extending that acquaintance. Incidentally, other ends may be subserved, but such subsidiary interests should never be allowed to encroach on the two main purposes. Though it may be necessary to consider these separately, in practice they should never be dissociated in the mind of the teacher, and their mutual dependence should be kept constantly present to the mind of the pupils.

"If the pupil is to secure control of the language as an instrument for the expression of his thoughts, it is necessary (1) that during the period of life when imitation is the chief motive principle in education, he should be kept so far as possible away from the influence of bad models and under the influence of good models, and (2) that every thought which he expresses,

[1] Report of the Committee of Ten on secondary studies, 1892, Washington.

whether orally or on paper, should be regarded as a proper subject for *criticism as to language*. Thus every lesson should become a part of the pupil's training in English. There can be no more appropriate moment for a brief lesson in expression than the moment when the pupil has something which he is trying to express.

"In addition to this incidental training, appropriate special instruction in English should form a part of the curriculum from the beginning. This special instruction may be considered under three heads: A. *Language and composition.* During the *first two years* at school, children (under eight) may acquire some fluency of expression by reproducing orally in their own words stories told them by their teachers, and by inventing stories about objects and pictures.

"In the *third school year* children should begin to compose in writing; they should copy and write from dictation and from memory short and easy passages of prose and verse.

"The subjects assigned should gradually increase in difficulty. (The paraphrasing of poetry is not to be commended.) Pains should be taken to improve the child's vocabulary by suggesting to him, for the expression of his thoughts, better words than those he may himself have chosen. He should also be trained to perceive the larger divisions of thought which are conventionally indicated by paragraphs. The teacher should bear in mind the necessity of correctness in the formation of sentences and paragraphs.

"Compositions and all other written exercises should receive careful and appropriate criticism, and the staff of instructors should be large enough to protect every

teacher from an excess of this peculiarly exacting and fatiguing work.

"B. *Formal or systematic grammar.* Not earlier than twelve years of age the study of formal grammar, with drill in fundamental analysis, may be taken up. It should not be pursued as a separate study longer than is necessary to familiarise the pupil with the main principles. Probably a single year will be sufficient. Subsequently, although grammatical analysis may properly accompany reading and the study of composition, it should not be regarded as a separate subject in the curriculum. The teaching of formal grammar should aim principally to enable the pupil (1) to recognise the parts of speech, and (2) to analyse sentences both as to structure and as to syntax. Routine parsing should be avoided.

"With regard to the study of formal grammar the Conference wishes to lay stress on three points: (1) a student may be taught to speak and write good English without receiving any special instruction in formal grammar; (2) the study of formal grammar is valuable as training in thought, but has only an indirect bearing on the art of writing and speaking; and (3) the teaching of formal grammar should be as far as possible incidental, and should be brought into close connection with the pupil's work in reading and composition. These principles explain the considerable reduction recommended by the Conference in the amount of time allowed to this study.

"The best results in the teaching of English in high schools cannot be secured without the aid given by the study of some other language. Latin and German are especially suited to this end.

"Every teacher, whatever his department, should feel responsible for the use of good English by his pupils."

One would like to say much on the study of language generally, and not only of its mere formal elements—of the "fossil poetry" to be found in figures of speech; of the metaphors which express the same thought in different languages. I give the names of some useful books, but there are many other good grammars.

Name of Work.	Author.	Pages.	Price.	Publishers.	Remarks.
Lectures on Language	M. Müller	1100		Longmans	Indispensable.
Do. Science of Thought	Do.	660		Do.	Full of interest.
Philology	Peile	100	1s.	Macmillan	Excellent. May be used as a class-book for children.
Etymological Dictionary	Skeat		7s. 6d.	Clarendon Press	Very necessary for language teachers.
Do.	Brachet			Do.	Introduction specially good. Required by all who teach French.
English Past and Present	Nesfield	450	3s. 6d.	Macmillan	Very good for upper classes.
English Grammar	Hyde Clarke	150	1s.	Crosby	Suggestive for the teacher. Contains much that is interesting.
Comparative Philology	Sayce	400		Trübner	
Primer of Phonetics	Sweet	120	1s. 6d.	Clarendon Press	
Visible Speech	Bell	80	2s.	Volta Press, Washington	The large book costs about four dollars.
Ecriture phonétique	Passy		1s. 6d.	Firmin Didot	Clear and easy.
Les sons du français					
Phonétique des deutschen	Vietor		5s. 6d.	Heelbronn	Somewhat difficult.
Introduction to Phonetics	Soames	280	3s. 6d.	Sonnenschein	A very useful introduction, adapted to English, French and German.
Expressive Reading	Meiklejohn	360		Holden	Very good. Contains a suitable selection.
Plea for Reformed Spelling	Pitman			Pitman	
Spelling Reform	Gladstone			Do.	
How to Teach Reading	Stanley Hall	40	1s.	Heath	

Amongst English grammars I may mention those by Morris and Mason, various books by Dr. Abbott, and the Parallel Grammar Series. There are good grammars, too numerous to mention, suitable for school use.

CLASSICAL STUDIES.

By W. H. D. Rouse, M.A., formerly Fellow of Christ's College in Cambridge, and a Master at Rugby School.

It were idle to expect that classics can be studied with the same thoroughness in girls' schools as in boys'. Girls' schools have grown up with other traditions; music and drawing and modern languages have so long been the staple of a girl's education, that it is perhaps too late now to make any radical change. Nor is it clear that even if possible, it would be well to substitute classics for these subjects. If the object of girls' education be, as many think, not so much to turn out finished scholars as to give an intelligent and sympathetic interest in life, this can be better achieved by grafting classics upon the existing curriculum, than by ousting other studies for the sake of these. Nevertheless, there will be many whose aim it is to give themselves to teaching as a profession, and some who are scholars born, and willing to spend their life in research and study. A good school must provide for these; and we have to consider how to combine the interests of both classes. The result will naturally be a compromise: the average pupil getting less than the average boy gets, while the few specialists will need to make up for lost time, and to compress their work into a shorter period than is usually given to it. The object of teaching will be the

Aim of a girl's education.

same in any case: a mastery of the matter perfect as far as it goes; and at the outset, the methods will be much the same.

Importance of Latin in all schemes of higher education.

It is scarcely necessary to insist on the value of Latin for every educated man or woman. It is not only valuable as a thorough training of the mind, in close reasoning and unremitting attention; nor only as opening to the student a literature of great interest: it is actually useful in a practical way. It is the key to all the Romance languages; Latin once mastered, French and Italian, Spanish and Portuguese are brought within easy reach. Almost all that has then to be learnt is the grammar of these languages; for the body of the words is already familiar. Certainly much study and practice will be needed before these languages can be spoken; but is it nothing to be able to read? Men who are preparing for the Civil Service in India learn Sanskrit; not because the Government is interested in the training of their minds, but because this is the key to the spoken dialects of India. As this dead language is practically useful in learning Hindi or Bengali, so Latin is practically useful in learning Italian or French. Then again, the grammatical drill is much more rigid and effective in teaching Latin than in teaching French, Italian, or even German. The relation of action to object, the subordination of thought to thought, the dependence of an oblique statement, all become clear to the mind in English or French when they have been made clear to the eye by Latin. Nor must we forget that without Latin no one can really understand English, especially the English of such writers as Milton and Bacon. And besides these advantages,

Latin has a direct use in several professions, which are now or may yet be open to women: in medicine, in the law, in letters; and even in business a knowledge of it, as already pointed out, will enable any one to become fit for foreign correspondence with far less difficulty than otherwise.

We will assume, then, that Latin will be begun even in girls' schools early enough (say at thirteen or fourteen) to get through the grammar, without undue pressure, by the time the specialist will wish to begin Greek. There may be at that time a certain amount of work yet to get through which a boy of the same age would have done; but this will have to be done more quickly, that is all. It must not be slurred or neglected, certainly; but the student will probably find that the work progresses at a rather quicker rate than might be expected, because the mind is already better trained and stored than is usual at that stage of the study.

The right method of teaching a language may be put in a nutshell: grammar, reading, writing and conversation should go side by side. For convenience, and because of the importance of the subjects, grammar and exercises in composition will naturally have special times assigned to them; but they should never be left out of sight. No construing lesson ought to be done without some grammatical drill, or without a few sentences of conversation, which is in fact composition in brief. The importance of grammar can hardly be overestimated; and the first thing the learner must understand is that the skeleton of the language, the inflections, have to be known by heart. A know-

The right method of teaching a language.

(1) Grammar.

ledge of cognate languages may help, and comparative tables of forms may help both intelligence and memory, but in the end it all comes to the same thing: however the pupil may have learnt them, he must be prepared to say off his declensions and conjugations from memory in the usual tabular form. There are, in this slipshod age, those who affect to despise precise knowledge, such as geographical names and facts, historical dates, and the paradigms of a grammar. "Learn by reading" is their motto in language; a most false and pernicious principle, as I can testify from sad experience. It has been my lot to learn one or two languages sufficiently well to enable me to read in them, and I grieve to relate that in these I shirked the drudgery of the grammar. The result is that although a certain amount of grammar has soaked in, I cannot yet read without a manual by my side. The most such a method can do is to give the general sense of a sentence; but it often fails to do even that, inasmuch as the general sense of a sentence is made up of the precise sense of its parts. Exactness in understanding is not to be had without paying the price, and the price is an exact knowledge of grammar. The rottenness of this system is shown when it comes to writing; and the productions of these empirics might well make Quintilian stare and gasp. Thus, however the grammar may be taught to begin with, the class should always have handy some book containing just the facts of the language, arranged in the usual fashion, and not encumbered with exercises. They will need this in the end, and they may as well have it at the beginning.

To "learn by reading" not sufficient.

The most useful books of the kind are Kennedy's *Revised Latin Primer* (or Postgate's *New Latin Primer*, which is in some respects better, notably in the marking of quantities) and Abbott and Mansfield's *Greek Grammar*. If no book of exercises is used, it is hardly necessary to say that these books cannot be learnt straight through from cover to cover. Indeed, the very first pages of both are unintelligible to beginners. In that case the teacher must himself select what is to be learnt; and the tables which follow (pp. 87-8) are meant to assist in this.

(2) Reading to be begun as soon as possible.

As soon as the pupil is able to understand a simple sentence, he should begin to use some reading book. One of the most satisfactory Latin readers I have had to do with is Abbott's *Dux Latinus;* some of the books err in not being simple enough in the structure of the sentences. Equally good and more easy to work with are the cheap *Single Term Readers* of Messrs. Rivington. The sooner the pupil can be put on to a genuine classical author, the better. *Eutropius, Nepos* or *Phædrus* is better suited for beginners than *Cæsar; Cæsar* will come next. Stories from *Ovid* may follow, and some of *Cicero's* lucid and interesting narrative; the best selection is that of Walford (Clarendon Press). *Virgil* may be well begun in Allcroft's *Story of Æneas* (Blackie). Once the pupil has attained this stage, further selection should be easy; only, be it said, too many notes spoil the scholar.

The student will be able sooner to tackle an author in Greek than in Latin, because of the greater simplicity of the language. In a very short time he ought to pass on to the excellent Clarendon Press *Easy Selec-*

tions from Xenophon, or some adaptation of stories from *Herodotus*, or parts of *Lucian*. He may then take one of the Rugby *Scenes from Greek Plays* (Rivingtons), and the easier parts of *Thucydides*, as edited in Rivington's *Middle Form Greek Readers*.

Construing.

In the construing lesson, the teacher will of course try to give each pupil a small portion to translate; and with a class of twenty-five this can easily be done in three quarters of an hour, leaving time for questions. He will then go through the passage himself, asking a question or two now and then to rivet their attention; and then one and another should be called upon to decline or conjugate as many of the words (regular as well as irregular) as can be got into the time. It is needless to insist that constant practice is necessary in grammar and parsing. In this manner the accidence will be kept fresh in the mind, and at last (it is to be hoped) firmly impressed upon it. But one most important aid to learning is so often neglected, that it will be necessary to speak about it rather fully. This is conversation. First let me say that nothing is meant resembling the method of Gouin. What may be the merits of that method in the case of French or German, it is needless to ask here; but I am confident that a syntax and accidence so elaborate as those of Greek could not possibly be taught by that method in any reasonable time, and I do not believe they could be so taught at all. Simple conversation can be begun as soon as the pupil begins to read. We will suppose the reading book contains the sentence, *Post triduum Cæsar equitatum ad Labienum misit.* The teacher will

(3) Conversation.

ask, *Quid fecit Cæsar?* and the pupil must be made to answer, at first by prompting if necessary, *Misit equitatum Cæsar.* The next question may be, *Ad quem misit equitatum?* the reply, *Ad Labienum misit equitatum Cæsar.* Other questions may be got out of this short sentence; such as *Quis misit? quid? quando?* The class should be made to give always a complete sentence in reply. At first they may have the book open before them; but so soon as they are used to the sound of the words, they should be made to shut the book and answer from memory. Five minutes at the end of a lesson is not much to give, and it is surprising how this kind of thing quickens interest and memory. The pupils find the advantage when they sit down to write their exercises, for now the words and constructions come quickly into the mind. Moreover, they will find that they have learnt unconsciously the difference in emphasis which position makes; for it will be observed that in the simple answers given above, the words which answer the question, and are therefore the most important, come first in the answer. The teacher should ring the changes on his reading exercise in this way, until after a term or two he will be able to begin talking to them on other subjects: such as the weather, the pictures on the walls, the pupils' dress, their inky fingers, anything that occurs to him. He must take every opportunity of dropping in the accusative and infinitive, a phrase of purpose or consequence, or the like; and thus, without much trouble, these bugbears will be got rid of. If a pupil can answer no more than *Nescio quid dicas*, it is

How to be used.

Its great advantages.

something that he uses the subjunctive in a dependent question.

A difficulty met.

But it will be asked, where are the teachers to be found who can do this? The answer is, that it is perfectly easy to learn, and only needs practice. The teacher will have his own book open before him, and need not go beyond its words till he has gained confidence; then by degrees he will do it more and more easily, and in a while talking will come quite naturally to him. In more discursive conversations, it is true, some preparation will be necessary, but it is quite worth the while. There are one or two little books that teachers will find useful,[1] but they will best make their own collections. A few hours' reading will give an ample store of colloquialisms from Plato, Aristophanes and Lucian, from Plautus, Terence, and Cicero's letters. It is not a bad plan to compile lists of colloquial sentences, say a hundred, and make every pupil learn them by heart.

A practical test.

It may be worth while saying that the writer has tested this method, and found it practicable with young and old. Moreover it has been applied, within his knowledge, to the teaching of Russian, a language hardly less difficult than Greek; and it is found possible, by combining conversation, reading, writing and learning by heart, to teach even obtuse persons how to read an ordinary novel or newspaper, to write a social or official letter, and to converse on ordinary topics, in three months, although before they began this course they knew not even the Russian alphabet.

[1] *Sprechen Sie Attisch?* Ioannides: Koch, Leipzig, 1889. *Sprechen Sie Lateinisch? Id.* Sargent, *Greek Prose Composition.* Blackie, *Gr. Conversation.*

For Latin composition the teacher can hardly do better than begin with Abbott's *Via Latina*; for Greek, Ritchie's *Practical Greek Method* is to be recommended, though not so unreservedly. What books are best to follow up with may be seen from the lists given below. But after all, it is not books that teach, so much as the teacher; and he had better fix on the subjects that are to be taught at each stage, and select or make the exercises necessary to teach them. (4) Composition.

Every exercise will of course be corrected, and the pupil should never pass on without having written out a correct translation of the exercise himself. If it is practicable, the best thing is for him to be told his mistakes, and then to rewrite the exercise, doing it again and again until it is right. But if time permits not this, the teacher may do a good deal to encourage self-help by going round the class whilst they are writing, and underlining all mistakes, which the pupils are then to correct, if they can. As soon as possible, pieces of continuous prose should be done as well as sentences; and this can be begun quite early, in fact after a couple of terms' work. The same plan of underlining mistakes may be followed with these; but it will be found advantageous, as the work increases in difficulty, to give more and more often fair copies of the teacher's, or by some other competent person. In all composition it is useful to dictate the fair copy, and then to give a few minutes for the class to learn it. The class should then be called up, the copy taken away, and the English should be translated *viva voce*. Of course any reasonable translation will be accepted; Practical hints for teaching it.

it is not meant that only the very words of the copy given will do. Let the old pieces be done over now and again at sight; and the results cannot fail to be good.

Most of the exercise books have explanations prefixed to each exercise, with examples. All such examples, or at least one of each construction, should be learnt by heart. The same should be done with the syntax rules of any grammar which may be in use. These should all be so well drilled into the pupils, that when a rule is given, or a heading, or (for beginners) the English meaning, the pupils should be able to reel off the example without hesitation. A certain portion of syntax, or of the exercise book, or both, should be set for each stage; and the classes which are studying that part of the subject must learn these, and keep up the old work. The reading book will give plenty of opportunity to ask for these quotations, and it should constantly be done. The oftener the pupil repeats his example of the instrumental ablative, or whatever it may be, the better he will know it; and he cannot know it too well. The pupil should be tested and kept up to the mark by regular grammar papers, at least twice a term.

Type-sentences to be learnt by heart.

Unseen translation should be commenced as early as possible, and form part of the regular work. Beginners can try some unprepared piece out of their reading book, which they must do on paper, and without help, except that they will use the vocabulary. As soon as the pupils are far enough on to use a dictionary, some special book of unseens should be taken, such as

Unseen translation.

Jerram's *Anglice Reddenda*. The use of helps can be gradually discontinued, until the pupil is weaned from them altogether. This can be done by forbidding dictionaries, and giving the meanings of the more unfamiliar words, fewer and fewer by degrees.

Repetition.

As soon as the pupil has begun to read a verse author, repetition should be begun, and never afterwards discontinued. Verse is easier to learn, so with verse we begin; but pieces of prose for learning should be set later. It is useful to make the repetition a part of the terminal examination, and to have every word of it written out. A Greek play and a book of Virgil should be chosen (say the *Medea*, or the *Œdipus Tyrannus*, and the IVth or VIth *Æneid*), together with the *Heroides* of Ovid, and if time allows, one of the speeches against *Catiline* and a *Philippic* of Demosthenes. These can be divided into portions, a portion for each form or class, and it should be understood that this has to be learnt during the term and kept up afterwards. The examination will simply consist in writing out all the portion learnt during the term, and all the old work, if any. As the work will always be the same, the older pupils will soon get to know it perfectly. The system here recommended has been used in one great school for perhaps a quarter of a century, and the results have been excellent.

Methods of work more advanced.

We will now suppose that the accidence and syntax are fairly well known, and that the pupil is ready to read a book of Virgil or a speech of Cicero, Euripides or Demosthenes, without serious difficulty. The methods followed will not change; they will merely be applied more widely.

The grammar will need to be kept fresh by the same means as before, and the study will be made more intelligent by use of the comparative and historical methods;[1] construing will be done in the same order, but some style will be expected; composition will be worked by means of correction and fair copies, but the pieces chosen will be harder, and here, too, style will be more attended to; conversation will by this time have become easy and interesting, and will cover a wider range of ideas. The aims of the teacher at this stage must be to teach self-reliance, and to direct the student more and more to illustrative reading. It is advisable at this stage to do part of the work without the aid of notes. The class is reading, we will suppose, a book of Horace's Odes, and one of Cicero's speeches. He should have a complete text of Horace, and the proper volume of Cicero's works (or the whole), with no notes at all; from this he should prepare the work for the first time of doing. Difficulties he must make out as best he can, with the aid of grammar and dictionary, some dictionary of antiquities (*Rich* for beginners, *Smith's* large one for older students), Gow's *Companion* and the pictorial *Atlas of Antiquities*. For revision, he should be given notes dictated by the teacher, or some edition with printed notes in it. The class work should be done with the utmost care and exactness, and parts of the author committed to memory: side by side with this should go more discursive reading, especially for the older students. They

What is to be aimed at.

Use of notes and other aids.

[1] Lindsay's *Short Historical Latin Grammar*. For Greek there is none such as yet, but notes may be given from Giles' *Manual*, or King and Cookson (see lists below).

should be encouraged (and at last expected) to read more of the author by themselves, and to bring difficulties to the teacher, who ought now and again to test their progress. Thus the curriculum of the latter part of the school work will consist of a portion of all the chief authors to be read in school, and as much more as possible of the same authors read out of school.

Illustrative works.

The pupil should also be directed to illustrative works which will serve to quicken his interest in any author. The excellent series of *Ancient Classics for English Readers* contains an account of each author, with extracts translated; and well do I remember my interest in the *Xenophon* of this series, when quite a boy. Passages might be read to the class from some book of travels; *On the Track of the Ten Thousand*, if Xenophon be the author; *Travels or Explorations in Egypt*, if Herodotus; and so forth. The reader of Cicero could not fail to be interested in Boissier's *Cicero and his Friends;* the Latin poets are well illustrated by Sellar's *Roman Poets of the Republic* and of the *Augustan Age*. Symonds' *Greek Poets*, Mahaffy's literary and historical books, Champagny's *Les Césars*, Girard's *Education Athénienne* are only a few out of many books which make the old days live again, and add to the literary appreciation of a learner.

Translations.

The elder pupils in their private reading must be taught the proper use of translations. It is not to be expected that they will do without them entirely; but they should have access to the best, in a school library or elsewhere, under some direction at first and afterwards at discretion. If they are clearly shown that it is their interest to use

them only where their own honest efforts have failed, or as models in the case of books they have already done, most of them will be sensible enough not to abuse their liberty. The pupil will gain much, too, by reading some of the old translations of the sixteenth and seventeenth centuries. From North's *Plutarch*, Hobbes' *Thucydides*, Holland's *Livy*, and other such, the learner will gain a new idea of what the English language can do, much to the advantage of his style. Nor is there the same danger in giving pupils these books as in allowing them the free use of modern translations. They reproduce the spirit rather than the letter, and are of little use as "cribs".

Style.

When the pupil has learnt how to write correct Latin or Greek, it will be time to pay some attention to style. The pieces chosen should at first be definitely historical, oratorical, philosophical, or dialogue, according to the author being at the time studied; in the last stage, these should be given one after the other, unless any weak point needs strengthening. It is useful now and again to give lectures and demonstrations in composition to a class. Each will be provided with a copy of the English, and the teacher then will get to the heart of it, state its thoughts in the sequence and subordination as simply as possible, and finally translate it bit by bit, using the blackboard to record each step. Questions may be asked or anticipated, and the various renderings suggested should be weighed and discussed. In this manner the beginner sees how a trained mind works, and is helped to guide his own. Good examples of the method may be seen in Sidgwick's

Lectures and demonstrations.

Lectures on Greek Prose Composition, Postgate's *Sermo Latinus*, and Sargent's *Primers*.

So far nothing has been said of verse composition. Much obloquy has been poured on this of late years; and it may be admitted that formerly too much time was given to it. But in despite of all that objectors can say, there is no manner of doubt that verse-writing is a practice of very great value. No one really pretends that it can make poets (the common sneer); all that is claimed for it is, that it is valuable as a mental gymnastic and in training the literary sense. Prose-writing can teach the power of words, but only verse their subtler associations; prose teaches the effect of position upon emphasis, but verse makes clear that there is such a thing as literary form. Most people never realise the rhythm of a piece of prose; its more striking faults may offend or its merits unconsciously please, but why these please or offend it would be beyond their power to say. But the dullest boy or girl who has learnt how to piece together an elegiac couplet, understands that this particular kind of composition is regulated by definite bounds, and cast in a *form*, the variations of which are limited. His ear becomes attuned more or less to rhythm, and this first step may be used to lead him on to the comprehension of literary form in other kinds. I do not say that he will never learn the lesson without writing verses, but that this is the easiest way to teach it; and I would apply the same principle to English or any other language. Some incidental advantages follow at the same time; not the least that the pupil understands the metre of the poets he reads.

Verse-writing.

Its value.

He will not learn this equally well by scanning. To have full effect the act of scanning must be unconscious; that is, the reader must take in words, meaning and rhythm at the same time without effort. So far as my experience goes, those who have not learnt how to write verses never read poetry in this way, but the scanning (if done) is done by a conscious effort, which draws off the mind from the poetry. Let the class, then, as soon as they begin to read a verse author, do a term's work or two on elementary exercises in metre (I will not say verse-writing) from Penrose's *Latin Elegiac Verse Composition*. The time will not be wasted, as has been shown, even if no more is done. Those who wish to go further in Latin verse cannot do without a skilled teacher, for no books exist which can help him much. Demonstrations on the blackboard can teach a great deal at this stage; but nothing can be done by the pupil without learning a great deal of Latin verse by heart. Greek verse is easier to compose than Latin, and may be begun quite late. Nearly all the elementary books on Greek verse are useless without a teacher, and need constant supervision and help; perhaps I may be pardoned for mentioning a little book called *Damon*, since this is the only one wherein the learner is led on by steps graduated close one after the other. Pupils may go straight from this book to the rendering of pieces of English verse, but both Sidgwick's and Sargent's books on Greek verse will always be found useful.

Pronunciation of Latin and Greek.

It is necessary now to say something about the pronunciation of Latin and Greek. The reformed pronunciation is strongly to be recommended. This is simply set forth in a

pamphlet published by the Cambridge University Press,[1] and for Latin is practically that given in the first pages of the *Latin Primer*. The sole advantage of pronouncing Latin and Greek words as if they were English, is that the learner need learn nothing new. But this is far outweighed by the disadvantages; and after all, the pupil has begun to learn French or German, and so is not struck dumb at being called upon to pronounce *i* as *ee*. The main disadvantages are these: (1) Confusion of *s*, *c*, and *t*, as *Ceres* with *Seres*, *cedit* with *sedit*; (2) Confusion of quantity. *mensīs* (abl. pl.) with *mensĭs* (gen. sing.), *mālum* ("evil") with *mālum* ("apple"); (3) Difficulty of pronunciation in many words, especially in Greek, as *παῖω* when the first syllable is made to rhyme with *law*; (4) Loss of much beauty in the sound of the languages.

The accent in Greek.

In one point, however, I differ from the authors of this pamphlet—that is, on the question of Greek accentuation. It is generally agreed that the Greek accents must be learnt, and rightly so, for many interesting linguistic points turn on them; but it is also the invariable practice not to try to pronounce them. But there is really no reason why most of them should not be pronounced. The Greek accent, as is well known, was a musical intonation; the acute[2] denoting a rise in the tone, the circumflex a rise followed by a fall, *i.e.*, a kind of drawl. The circumflex can always be pronounced with ease; so can the acute, when final; so can the great majority of internal

To be taught as far as practicable.

[1] *The Reformed Pronunciation of Greek and Latin*: Arnold and Conway. 1895. 1s.

[2] The grave on finals, when written for acute, is practically the same.

accents. It is just as easy to say ἐλΕΙπουτο as ἐλειΠΟΝτο. The only cases of real difficulty are words like φέρηται, ἄνθρωπος, where a long vowel follows an accented syllable. These might be waived for beginners, but these are few compared to the rest; and even to pronounce the accent and quantity in these is not very difficult, especially with the reformed pronunciation. This plan has been tried, and found to work fairly, with young boys from twelve to sixteen.

Value of old English translations.

There is a means by which the classical teacher may be greatly helped, and that is if the general course of studies in the school be so arranged, that good English translations of the classics form a fair proportion of the English authors read. Many of these translations are themselves English classics, such as Chapman's and Pope's *Homer*, North's *Plutarch*, Dryden's *Virgil* and *Juvenal*. Others there are in plenty, no less excellent than these, if less known—Phaer's *Virgil*, Holland's versions of *Livy*, *Suetonius*, *Plutarch's Morals*, and many other works; Hobbes' *Thucydides*, Barnard's *Terence*, Echard's *Plautus*—indeed there is hardly a classical author of repute who did not find a worthy translator in the Elizabethan age. A few of these are accessible in cheap reprints,[1] and if there were a demand for any of them a reprint would appear at once. By reading these the children will become familiar with the subject-matter of classical authors before they have to translate them; and they will also have made acquaintance with some fine works of literature, many

[1] Messrs. Dent & Co., in the Temple Classics, have brought out Chapman, and intend to include North and others.

of which (such as North) are interesting from association with Shakspere. When Roman or Greek history comes in the regular historical cycle, some of these books might well be read along with them.

The last thing to be mentioned is the use of models and illustrations. There is almost no limit to the number of such things that can be had; the real limit is the depth of the teacher's purse. But the schools ought to provide these things for use; it is too much to expect that teachers should spend their sparings and savings in educational plant. Any money spent in this way is amply repaid by the interest added to the work. Classical teachers ought to have at their disposal lantern slides illustrating classical life and history, wall pictures and maps, photographs and models. Slides may be hired from the Hellenic Society, or bought through the Teachers' Guild;[1] for wall pictures there are two excellent series, those of Cybulski and Launitz. Of photographs there are thousands. The wise teacher will travel and collect them; but for those who will not, one or two addresses of photographers are given below,[2] with the names of some useful works. The pictures can be kept in the school library, and hung up for the term when they will be useful. For the photographs, frames with movable backs are most to be recommended, as the pictures can then be changed at will. The teacher should talk about them, and question his class, and (as already suggested) they may form a topic of Latin or Greek conversation.

Models and illustrations.

[1] There is a large collection in the Guild Museum, Gower Street, London. Here also models may be seen.

[2] See p. 93.

It is astonishing how much children will learn from these things. In addition, it is highly desirable that each pupil should have his pictorial atlases as he has an atlas of geography.

Recapitulation.

The writer has now pointed out what, in his opinion, is the place which Latin and Greek should take in a girl's education, and the methods best calculated to teach them. If in these there is not much that is new, they are at all events such as experience has proved to be sound. One or two points may be indicated which are apt to be weak in girl students, and must therefore be specially guarded against. They are apt to be shaky in grammar, and they seem to have less mental self-reliance than boys. As regards those who learn late, they must go over the same ground; for no teacher and no book, no not if angels wrote it, can point out a royal road to learning. These late-learners bring to the task a mind already more or less trained, and so they will get on faster; but let them beware of trying to get on too fast. They must make up their minds that grammar has to be learnt, and work at it with a will. If they have already done half of the drudgery by learning Latin, as here recommended, their task will be not easy indeed, but not beyond their powers; and even if both Latin and Greek are begun late, they need not even then despair. I have known several, both men and women, who have begun late and ended with success, even with distinction; although it must be admitted that these were persons of exceptional powers. But it is of the utmost importance that the most capable teachers should have charge of the late-learners. The greater the difficulty,

Weak points to be strengthened.

the greater need for a teacher who has his subjects at the ends of his fingers, who can see a short-cut, and is able to judge how much of the preliminary work can safely be shortened, or even omitted for the time. When skill in the teacher meets with will in the taught, between them they may remove mountains.

SUGGESTED SCHEME OF WORK IN SIX PARTS.

LATIN.

Grammar.	*Composition.*
1. Parts of speech and elements: regular nouns and adjectives: *est*, *sunt*, and how to form 3rd sing. and pl. pres. indic. first conjugation, given the infinitive present.	1. Simplest sentences: statement, question and answer.
2. Commonest pronouns: present indic. of *sum*, and how to form 3rd sing. and pl. of all four conjugations, given the infinitive present.	2. Cases of agent and instrument, time and place: *quam* with nom. and acc., abl. of comparison: a few common prolate verbs: simplest relative sentences and *cum* temporal.
3. Pronouns and cardinal numerals: active of the four conjugations: *sum*: meanings and case of a few common prepositions.	3. Ablative absolute, and a few more case usages: accusative with infinitive: use of *se*, *suus*, *ipse*: double questions: factitives in active, prolate verbs: relative sentences, with a hint of finals: commands and prohibitions: causal, concessive and temporal sentences.
4. Ordinal numerals: passive of the four conjugations: a few common irregular verbs.	4. *Quisquam*, *quisque*, *quivis*, etc. (meaning): chief case usages: factitives: common verbs with dative: dependent questions: accusative with infinitive, tenses distinguished: simple finals, pos. and negative: simple consecutives: verbs of hindering and fearing.

5 and 6. Deponents, impersonals, irregular verbs: fill up gaps (add *e.g.*, the rest of the numerals).

5. *Utor* and other verbs with various cases: all case usages: gerund and gerundive: some impersonal verbs: final and consecutive sentences: conditions begun.

6. *Quisquam*, etc., use and idioms: participles: *nunquam*, etc., causal, concessive, temporal and other conjunctions: conditions: *obliqua*.

GREEK.

Grammar.

1. Regular nouns and adjectives: article: ἐστίν and εἰσίν: how to form 3rd sing. and pl. pres. indic. of verbs in -ω, given the infinitive present.

2. Some irregular nouns: cardinal numerals: comparison of adjectives: commoner pronouns: εἰμί, with active of λύω. General rules for accent in its dependence on quantity.

3. Numerals: εἶμι, λύω: a few irregular nouns. Accent of nouns and verbs (general rules).

4. Contracted verbs: parts of a few irregular verbs: accent of nouns and verbs (special rules) and contracted syllables.

5. Verbs in -μι: οἶδα φημί: parts of commoner irregular verbs.

Composition.

1. Concords (including that of neuter plural): article in direct predication: simplest sentences, statement, question and answer: simplest meanings of cases: meanings of ἀπό, εἰς, ἐν, ἐξ, μετὰ (gen.), σύν.

2. Article with demonstrative and with adjectives of position: αὐτός: simplest meaning of the tenses: accusative with infinitive: some further particles of question and emphasis.

3. Genitive absolute; agent and instrument and other case usage: infinitive with verbs of command or request: commands, prohibitions, wishes (opt.): ἵνα and its sequence: double questions and further formulæ.

4. ὅπως with fut. indic. ὥστε: all final constructions: verbs of fearing: διά, κατά, μετά, παρὰ, πρός, ὑπό.

5. Accusative and nominative with infinitives: use of participles with certain verbs: consecutive and temporal constructions: simple indirect statement and question: the conditions begun.

6. Irregular nouns and verbs: fill gaps. Revise with Goodwin's *Grammar*.	6. The cases, tenses, participles and prepositions: idioms, such as καίπερ ὅτε ὡς: conditions: all rules of *obliqua*.

BOOKS.[1]

The writer wishes it to be understood that this is not an exhaustive list. These books he has either tested by use, or has good grounds in the experience of others for the judgment given of them; but there are many others of the same kind, and there is often little to choose between them. The publishers whose books are given below are: Camb. Univ. Press, Clarendon Press, Blackie, Dent, Grevel, Isbister, Longmans, Macmillan, Murray, Rivingtons, Seeley, Trübner.

LATIN: GRAMMAR AND COMPOSITION.

Public School Lat. Primer (or Postgate's *New Lat. Primer*, in some respects a more useful book) should be kept at hand, if only for reference and revision. Abbott, *Via Latina* (v), 3/6; excellent. Morris, *Elementa Latina*, with *Tripertita* as an exercise book, followed by Mansfield's *Lat. Exercise Book*; a good series for very beginners, but the exercises need supplementing. Allen, *Rudimenta Latina* (v) 2/6; belongs to a complete series, the other books being an *Elementary Latin Grammar*, 2/6, a *First* (v), 2/6, and a *Second Latin Exercise Book* (v), 3/6. The last named is an excellent book for teachers, who may learn much from it, but I have found it dull and difficult for the learner. Ritchie, *First Steps in Lat.* (v), 1/6; also one of a series, with *Ex. in Lat. Prose Comp.* (v), 2/6, and *Easy Continuous Lat. Prose*, 2/6,[2] *Latin Clause Construction*, 1/6, a *First Lat. Verse Book* (v), 2/-, and a Reader *Fabulæ Faciles* (v), 2/6, with *Imitative Lat. Ex.* (v), 1/6, based upon it. These are good books, and I prefer them to Allen's after using both series: the explanations are clearer, and there are more sentences. Macmillan's *Latin Course* (v), two parts, 3/6 and 4/6; good. It has an advantage in the large number of exercises. England, *Exx. in Latin, Syntax and Idiom* (v k), 2/6; a companion to Roby's *School Latin Grammar*. Rooper and Herring, *Primary Lat. Exx.* (v), 3/6; specially adapted to the *Revised Lat. Primer*. North and Hillard, *Lat.*

[1] V is added to those which have vocabularies; K means key.

[2] See below, Champneys.

Prose Comp. (v), for the middle forms, 3/6; carefully arranged and progressive from phrases and sentences to continuous prose. Champneys and Randall, *Easy English Pieces for Translation into Latin Prose*, 1st and 2nd series, each 1/6; excellent, and can be used with a sentence book as soon as the elements are mastered. More advanced Grammars: W. M. Lindsay, *Short Historical Lat. Gr.*, 4/6; excellent. This is mainly philological. H. J. Roby, *School Lat. Gr.*, 5/-; good. Not philological.

For Idiom and Construction in the higher stages:—

Bradley, *Arnold's Lat. Prose Comp.* (v), 5/-, and *Aids to Writing Latin Prose*, 5/-, with full explanations; the former has sentences, the latter continuous prose. Abbott, *Lat. Prose through Eng. Idiom*, 2/6; is a most useful little book for committing to memory. This should be used with one or two forms or sets in addition to the stock books. Jerram, *Latine Reddenda*, 1/6; useful collection of miscellaneous sentences. Books of chosen English: Holden, *Foliorum Centuriæ*, 8/-, for Gr. and Lat. prose; the standard collection. Wilkins' *Manual of Lat. Prose Comp.*, 4/6. Sargent and Dallin, *Materials and Models for Lat. Pr. Comp.* (k), 6/6; with references for each piece to portions of Latin authors on similar subjects; a useful book. Potts, *Passages for Transl. into Lat. Prose* (k), 2/6. Nettleship, *Passages for Transl. into Lat. Prose*, with a valuable introduction. Postgate: see below.

Most useful for teachers, advanced students, or private students:—

J. Y. Sargent, *Lat. Prose Primer* (v), 2/6; most of the pieces are carefully analysed, and the steps by which the sense is mastered and then translated are shown in detail. It is a companion to Sargent's *Easy Passages for Transl. into Lat.* (k), 2/6. Potts, *Hints towards Lat. Pr.*, 3/-; perhaps the most useful of all manuals on Latin prose style. Postgate, *Sermo Latinus* (k), 2/6; interesting and instructive. Ramsay, *Lat. Pr. Versions*, with the English, 5/-; excellent models. Meissner's *Lat. Phrase Book*, 3/6; phrases and quotations classified and indexed; a most useful book. Roby's *Lat. Gr.*, two vols., 9/- and 10/6; indispensable. W. M. Lindsay, *Lat. Language*, 21/-; indispensable to those who study Latin from the comparative standpoint. His *Short Historical Lat. Gr.* will, however, be sufficient for less advanced students.

VERSE.

Manuals by Penrose (elegiacs); Morice (same, more advanced), and Lupton (lyrics): Holden, *Foliorum Silvula* (the best anthology).

READERS.

There are numbers of elementary readers, and there is really little to choose between them. The most useful set seems to the writer to be Rivington's *Single Term Latin Readers*, 8d. to 1/4 each. With notes, exercises and vocabularies. These are sets of three books for each of six terms, each book containing enough for a term's work, and each set having the same standard. Others in common use are: Morice, *Loculi*, 2/-; Abbott, *Dux Latinus*, 2/-, adapted to *Via Latina*; Ritchie, *Fabulæ Faciles*; Bennett's *Easy Lat. Stories*, Hardy's *Lat. Reader*, etc. Teachers and private students may learn much from Abbott's *Latin Gate*.

GREEK: GRAMMAR AND COMPOSITION.

Abbott and Mansfield, *Primer of Gr. Gr.*, 2/6, or with Syntax, 3/6; is perhaps the most convenient as a collection of facts. A *Primer of Gr. Ex.*, 3/6, has been compiled to go with it. Ritchie's elementary exercise books can be recommended. Ritchie and Moore, *Practical Gr. Method for Beginners* (v k), 3/6. Ritchie, *First Steps in Gr.* (v), 2/-; exercises need to be supplemented. Jackson, *First Steps to Greek Prose Comp.* (v k), and *Second Steps* (v k), 1/6 and 3/6; are useful exercise books. Macmillan's Greek course: *Easy Ex. in Gr. Accidence* (v), 2/-; *Easy Ex. in Gr. Syntax* (v), 2/6; *Second Gr. Exercise Book* (v), 2/6; companions to Rutherford's *Greek Grammar*. They are almost exclusively exercises, and very full. Jerram, *Graece Reddenda* (v), 2/6; a collection of miscellaneous sentences. Sidgwick's *First Gr. Writer* (v k), 3/6; easy continuous prose, may be used along with any book of sentences. Following this comes his excellent *Gr. Prose Comp.* (v k), 5/-, and then the pupil will be able to dispense with crutches. Both have clear and useful introductions. Arnold's *Gr. Pr. Comp.* (v k), 3/6, ed. by Abbott, has useful exercises in idiom.

More advanced, and to be used as soon as the accidence is mastered, is Goodwin's *Gr. Gr.*, 6/-, new ed., excellent; or his *School Gr. Gr.*, 3/6. To the advanced student Goodwin's *Gr. Moods and Tenses*, second ed., 14/-, is indispensable. Much may be learnt from the *Gr. Gram.* of Goodwin, 6/-; Rutherford, 3/6; and Sonnenschein. Collections of chosen English: Holden, *Foliorum Centuriæ*; Wilkins, *Manual of Gr. Prose Comp.*, 5/-; Sargent and Dallin, *Materials and Models for Gr. Prose Comp.* How to tackle a piece of English, see Sidgwick's *Lectures on Gr. Prose Comp.*, and *Lectures on the Teaching of Composition*, 4/6. Sargent's *Gr. Prose Primer* (v k), 3/6, is stimulating.

VERSE.

Damon: A Manual of Gr. Iambic Verse (v k), by Williams and Rouse, 2/6. Holden's *Foliorum Silvula* (the best anthology). Help may be obtained from the Greek verse books of Sidgwick and Morice (v k), (v), Sargent (v), and Kynaston (v), 4/6.

READERS.

Rivington's *Single Term Readers* (v), like his Latin readers, 9d. each; recommended. Heatley, *Græcula* (v k), 1/6, for beginners. Sidgwick, *First Gr. Reading Book* (v), 2/6: 100 easy stories, with some grammar. Rushbrooke, *First Gr. Reader* (v), 2/6; Bell's *Second Gr. Reader*, 3/-; Murray's *Fourth* (specimens of dialects), 4/6, and Abbott's *Fifth* (Homer and the dramatists), 4/6. Macmillan's *Gr. Reader*, stories and legends, 3/-. Mayor, *First Gr. Reader*, 4/6. The student had better pass on as soon as possible to some such book as the following: *Xenophon, Easy Selections*, Philpotts and Jerram. *Herodotus, Battle of Marathon in Attic Prose. Herodotus, Tales from, Atticised*, Farnell. 1/6. *Arrian: Selections*, Walpole. 1/6. *Lucian: Extracts*, Bond and Walpole. 1/6. The next step will be to selections from the *Attic Orators:* Rivington's *Middle Form Greek Readers*, 1/6 each; Plato's *Crito* or *Apology;* Sidgwick's *Scenes from Greek Plays.*

GREEK AND LATIN: UNSEEN TRANSLATION.

Jerram, *Anglice Reddenda*, three series, 2/6, 3/-, 3/-. Reid, *Transl. at Sight*, 2/6 each part. Spratt and Pretor, *Transl. at Sight* (k); an extremely good selection of difficult passages.

Models: Jebb, Jackson and Currie's *Translations*, and Fox and Bromley, *Models and Exx. in Unseen Translation.*

ANTIQUITIES.

Gow, *Companion to School Classics;* indispensable. Schreiber, *Atlas of Class. Antiq.*, 21/-. Anderson, *Atlas to Homer*, 21/-. Rouse, *Atlas of Gr. and Rom. Portraits*, 1/6 each part. Macmillan's *Manuals of Antiq.*, 5/- each. Murray, *Handb. of Gr. Archæology*, 18/-. J. Harrison, *Mythol. and Monuments of Early Athens.* Middleton, *Remains of Ancient Rome.* Lanciani, *Ruins of Ancient Rome* and other works. Schneider, *Das Alte Rom.* (Pictorial atlas with maps; excellent.)

COMPARATIVE PHILOLOGY AND TEXTUAL CRITICISM.

P. Giles, *Manual of Phil.;* the best handy manual. Henry, *Comp. Gram. of Gr. and Lat.* King and Cookson, *Introd. to the Comp. Gram. of Gr. and Lat.*, 5/6. Lindsay, *Short Hist. Lat. Gram*, 5/6.

More advanced: Brugmann, *Compar. Gram. of the Indo-Germ. Languages* (translated). The standard work. King and Cookson, *Principles of Sound and Inflexion*, 18/-. Lindsay, *Lat. Language*, 21/-. Prellwitz, *Etymolog. Wörterb. der griech. sprache;* good. Wharton, *Etyma Græca* and *Etyma Latina*. Thompson, *Gr. and Lat. Palæography*, 3/6.

ILLUSTRATIVE PICTURES AND MODELS.

Cybulski, *Tabulæ quibus antiquitates Græcæ et Latinæ illustrantur* (Köhler, Leipzig). Wall pictures, coloured, 4/- or 5/- each. An excellent series. Launitz, *Wandtafeln zur Verauschaulichung antiker Lebens und antiker Kunst.* Through Deighton Bell, Cambridge. Casts: Brucciani, Covent Garden (catalogue).

Models: Inquire at Museum of Teachers' Guild, Gower St., London.

Slides: the same. Field, *Cat. of Lantern Slides for Fyffe's History of Greece*, 6d. *Roman* catalogue preparing. Catalogue of the slides in the Loan Collection of the Hellenic Society.

Photographs, etc.: Catalogue of *English Photographic Company*, S. C. Atchley, Place de la Constitution, Athens. A very full and cheap collection. Mr. Atchley is well known to the writer, and strangers need have no hesitation in writing and sending money direct. Photographs are sold by *German School* at Athens.

The following Greek photographers have good collections: *Rhomaïdes Frères*, Rue de Niké, 24; *Constantin Athanasiou*, Rue d'Hermès, 6. Catalogues. The Levant: Bonfils & Co., Beyrout, Syria; and local photographers at Constantinople, Smyrna, Jerusalem and Cairo. Purchases should be made through some one on the spot. Italy: Sommer e Figlio, Largo Vittoria, Napoli: photographs and models. Collezione Brogi, and the Stabilimento Fotografico Moscioni have large choice. Museums. London: Stereoscopic Company, Clarke & Sons, Mansell & Co. Berlin: the Museum publishes a few (catalogue). Paris: Girardon, 15 Rue Bonaparte. Munich: Bruckmann, Verlagsanstalt für Kunst (see below).

Publications. *Denkmäler der Griech. und Röm. Skulptur:* Brunn & Bruckmann, Munich. Magnificent plates. *Griechische und Römische Porträts:* Arndt & Bruckmann, Munich. *Einzelverkauf:* photographs of sculpture (Bruckmann), separately about 6d. each. *Classical Sculpture Gallery:* Grevel & Co. 12/- a year. Cheap reproductions of all the chief works of sculpture, ancient and modern. *Bilder zur Mythologie und Geschichte der Griechen und Römern.* Hoppe-Graeser, Vienna.

MODERN LANGUAGES.

By Dorothea Beale.

First a few words on the order in which languages should be taught. I do not think that we should make a change for the better as regards girls' education, were we to substitute Latin for French, placing that subject first in order of time. It seems to me best to begin with French, a language etymologically related to our own, and having a simple grammatical structure.

Order of language teaching.

Secondly I prefer to take German, the grammar of which approaches more nearly to the classical models, whilst the inflections are easier to learn than the French; its etymology too not only throws much light on our own, but is more transparent, which makes it a medium, perhaps as valuable as Greek, far more valuable than Latin, for showing the refinements of language, the poetry and philosophy fossilised in speech. Thus those only take up the classical languages who have some linguistic power. Girls who are unable to master the difficulties of the grammar will never encounter them, and as the languages gradually increase in difficulty, we can better fit the means of education to the power of the pupil. The classics form, it is true, a key to modern tongues, but on the other hand modern tongues lead up to Latin and Greek, and I believe this order is equally

logical and answers better with girls; it is something to open to them the literature of France and Germany, something to teach them languages, so that they shall find the study (as they generally do) one of interest. At any rate there are four stages at which we can leave behind those unable to continue their march, and who, if we tried to bring them further, would form only a crowd of stragglers. Those who have a good knowledge of one or two modern languages will have no great difficulty in taking up Latin or Greek say at fourteen or fifteen. They will have a large etymological store, which will make it easy to acquire the vocabulary, and they will have to study only the differentia of the grammars of the different languages—may we not rather say dialects?—of the Indo-European stock.

Nearly all syntax rules will be already known, and a Latin Grammar in which the principles are brought out, may take the place of one written for young boys in whom the grammatical faculty is rudimentary—in which dogmatic rules only abound; dogma should as far as possible yield to principles, which are intelligible and interesting to elder girls, and this will help them over the necessarily considerable labour of learning the inflections. Perhaps few will attain the minute exhaustive scholarship of which some minds are capable, but many will read with keen enjoyment; some girls who have begun late have taken high places in university examinations.

Much has been recently written on the subject of modern languages; in the books edited by Mr. Barnett and Dr. Spenser, just published, to which I have frequently referred, are excellent papers. I shall

therefore make my remarks on the subject very brief. In the first is an excellent paper by Mr. Storr, and Dr. Spenser has written a paper of about fifty pages, giving a full account of the modern system of teaching.

It is time that some reform took place. The Oxford Local Examiners of 1896 reported the French as phenomenally bad. In 1897 nearly half the seniors failed. I have tabulated the answers to the few questions set by me to pupils entering over twelve, and I find, taking some two hundred, that not one in ten knows the regular verbs, and scarcely any write very simple sentences without egregious faults.

Only oral teaching at first.

The first teaching in modern languages should certainly be oral. In the kindergarten, French and German songs and simple sentences may be taught in the lowest forms. Supposing that children begin about seven or eight, it seems better they should not see written French at first. If they have learned the alphabet, as I have suggested in a former paper, they will take some interest in the new sounds of French and might read from a phonetic transcription.

Phonetic alphabet.

There are good papers in the (August and September, 1897) *Journal of Education* on this subject by Mr. Ware, Mr. Kirkman and Mons. Passy, which I commend to my readers. I give a few extracts. Mr. Ware writes: "In Germany, every teacher has to render himself capable of teaching pronunciation, and results prove that he succeeds. In various German training colleges, there are courses of lectures on phonetics applied to the study of foreign languages. It was owing to the success attending the introduction of phonetics in the French teaching in

certain German schools that I was finally induced to try them in the earliest stages of French teaching at Bradford. The results have exceeded my expectations."

This is confirmed by Mr. Bearder of Nottingham. He writes: "Though I have not used the method in such a thorough and systematic manner as he has done at Bradford, still the results are such as to convince me that I am entitled to support Mr. Ware in his refutation of one argument, letting alone others, which the opponents of phonetic teaching continually bring forward, that time is wasted in learning the two modes of spelling".

If it is not possible to get the reading taught phonetically, using the international alphabet, the use of the tables of Larousse will be a great help. In any case pieces which are learned by heart, dialogues, etc., should be repeated in the class after the French teacher, before the children see the book. Few English people have ever learned to distinguish the sounds of the final syllable in the imperfect and *passé défini* or the future and the conditional or the gradual opening of the sounds as we pass through *e, é, è, ê*. Very few pronounce *u* properly when it precedes another vowel—*lui* is pronounced *looee*. Very few observe that a labial nasal before another labial is changed into a dental nasal, thus not *impossible* but *inpossible*, and nearly all say *leer* for *lee* + *r*. Children are taught to read so unsystematically, that if they are told these things they forget them, and waste time in repeating easy sounds, instead of working at the hard ones. Children should not be set to learn verbs, etc., without having first repeated them

Common errors.

and practised the sounds with their teachers. When they do begin to read, the sound-table should be hanging up, and should be referred to, that they may correct their errors themselves. These pronouncing lessons should go on in a room alone, so that children may speak together in imitating the teacher; then she should single out individuals for different sounds; but the whole class should never sit round, as is the custom in some schools, and hear each of their companions read in succession a piece of French with true British accent. If they listen, their time is worse than wasted; if they do not, they get habits of inattention. The attention must not be wearied, and if two or three sounds are acquired each week, the whole will very soon be mastered, and time saved for the repetition of poetry, for *viva voce* composition, etc.

Translation.

When children begin to read, we should spare them as much stupefying dictionary work as possible, but it is not well to let them learn the vocabularies of the book without comment, and they should be led from their past knowledge to discover the meaning, and as far as may be, get at the root meaning of unknown words, and see the underlying figure. Thorough work is much quicker in the end. Pascal's father left his son with a Latin book, and no dictionary, to find out the translation. This may be a counsel of perfection suited only to a Pascal, but there are not many words of which children could not discover the meaning. Much more translation from French into English should be got through than is usual; children ought soon to be able to read at sight. Time need not be wasted by hearing all that has been prepared, but each could be called on to

translate one sentence, and then translation go on at sight.

The pupil should have a small note-book in which each new word is entered. This book should be divided into three columns: the first will contain the word in its general form; the second the root of the word with its etymological meaning, if known, or any cognate by which it may be remembered; the third column, the primary and principal secondary meanings. Every noun should have the article before it; these should be learned and repeated before the next translation lesson. The teacher may also give groups of words, derivatives of the root, and by this means a copious vocabulary will be in a short time acquired—the words once grasped will not be forgotten. The enthusiastic teacher will probably have to put a check on his zeal, for if he is led off too far into etymologies, he will get through no translation. After a little the pupil should begin to prepare alone, and to make his own word-book; every translation should begin with the inspection of this book by the teacher and by the hearing of the words. Vocabulary.

Since the acquisition of correct habits is the main thing in learning languages, we should before all things prevent the acquisition of wrong ones, by letting pupils speak, and write exercises before their ear and eye have been trained. They should not be allowed to speak a language carelessly, to "pick it up," as the phrase is, incorrectly. A most pernicious practice is it to set girls to speak a foreign tongue together. The evil habits acquired cannot possibly be undone in subsequent study. I knew a master of Exercises.

languages who refused to give lessons to those obliged to speak thus. He could not, he said, in a few hours a week, correct the bad French learned during the remainder. Learning bad French, however, is one of the least evils connected with this practice. Anything deserving the name of conversation is banished where it is strictly enforced, and so the mind is dwarfed and stunted, and when girls leave school, they are often found unable to talk except upon trivial subjects, and unable to express themselves like rational beings in any language.

I quote from the rules of the *maître phonétique* :—

"Le maître fera étudier les phrases les plus uselles, des textes suivis, dialogues, descriptions et récits, aussi faciles, aussi naturels et aussi intéressants que possible. Il enseignera d'abord la grammaire inductivement, comme généralisation des faits observés : une étude plus systématique sera réservée pour la fin."

Re-translation.

The translation book must be made the basis of teaching, and the ear familiarised with the correct form by the learning of good French, the rules as far as possible being found inductively. Thus the children will observe the changes in *mon frère, ma mère, mes frères et mes sœurs*, and be able to make a table. Life is too short to find out all grammar, and so we shall eventually have recourse to collections of grammatical forms, but this need not be done until a good deal has been discovered by means of sentences formed for the purpose.

Easy passages should be translated into English and back into French according to Ascham's method. This should precede the writing of exercises, which may, how-

ever, be read at sight in class. Children should repeat verbs interrogatively and negatively with pronouns in their places, so that the ear may be trained before the rule is discovered. Fassnacht's books are good. Mrs. Bell's books too are useful for children to learn instead of ordinary dialogues. It is impossible for them to speak in a natural way, when they are merely giving abstract sentences, but they can hold short conversations with one another in an animated way, and these can be taught *viva voce* in daily lessons.

Monotony should be avoided, and occasionally instead of setting an exercise, it is well for the teacher to relate a short story, and let the children repeat what they can, or write what they can remember; but in all these things we must avoid as much as possible wasting their time by making them listen to one another's mistakes. Composition.

Exercises may be written and a grammar used later, but if the teacher economises time, there will remain enough in each lesson to prepare pupils for the writing of the next exercise and to warn them of mistakes they would otherwise be likely to make. I need not repeat here what I have said under the head of corrections and time saving (see p. 28, introduction).

Finally as regards grammatical rules. There are doubtless many forms which must be learned, and rules which we must treat as arbitrary, because we can see no reason for them, but the more reasons we can show, the more interesting will language become, and the easier to learn. Thus children are glad to discover that the terminations are not mysterious letters for which there is no reason, but the remnants of pronouns put on at the end—that in the French Philology.

future we get the same as the English, "I have to write," only "have" comes after, and in the conditional, "I had". They need not then learn these tenses, only notice the abbreviations. The survival of the *t* in *a-t-il* and many other things will enliven the grammar lesson. Peile's delightful *Manual of Philology* and D'Arcy Thomson's *Day-dreams of a Schoolmaster* are suggestive, but of course the more a teacher knows of philology, the more interesting she can make her lessons, and one versed in the subject should be found in every school.

Rationale of rules.

The never-ending rules for the past participle may be at once disposed of by just showing children that the participle being an adjective must agree with the word it belongs to. If I say, "I have written a letter," of course "written" belongs to letter and therefore it must agree. We need not make them think about whether it is subject or complement. The only curious thing they have to notice, is that it does *not* agree when the word it belongs to comes after "have". Is it because the thought of the act of writing is more present to the mind when we say, "I have written a letter," and we do not think of the letter as written, whereas when the letter is objectified to our gaze, being represented by a pronoun, we think of it rather as a letter written?

The learning of a third language will present less difficulties. If the language is German we can, by a few simple etymological laws, get command of a copious vocabulary in a short time. The declensions offer some difficulty at the outset, chiefly on account of the adjectives. But the phonetic change is made in order to avoid the repetition of the harsh sound *s*, *m*, *r*, and therefore when this occurs in a preceding

pronominal adjective, it is dropped or softened in the second adjective; thus the car guides, and we have not to think about the forms; one has only to notice that in the oblique cases it is weakened to *n*, and in the plural it is always *n*.

The order of words offers difficulties too, and we have a complicated construction. We have to fix our attention on the functions of words, as we did not in a simpler language, for a whole row of words goes to make up an adjective, and dependent sentences are constantly taking the place of simple words. Insight there must be to see what are dependent sentences, and then the whole paraphernalia of rules about certain conjunctions which require the verb to be sent to the end vanish too and we move freely.

Another difficulty is the different uses of prepositions. In English we go "through" the street, in German "on". We go "through" a town, the Germans "over". Let the difference of the conception be realised, and the prepositions will come right.

Literature.

It is a great pleasure to those approaching maturity to study a language made for metaphysics. We cannot read German without finding everywhere fossil poetry and philosophy, and the rolling periods and the grand verse stir our soul like a trumpet, and we know that we hear the voice of an heroic people, who speak a language and think thoughts akin to our own.

Latin does not attract perhaps in the same way; the military precision of the Latin classics has its charm. I feel strongly that Latin should, however, properly come after German, specially for girls. There is a pestilential atmosphere in the Campania, and one

needs to have one's moral fibre braced by the poetry of the Hebrews and of England and Germany, if one would remain unaffected by writings saturated with heathen thought.

Those who are able to spare time and strength for Greek, and love poetry in all its forms, will delight indeed in the "Wine of Hellas," and with the enthusiasm which they will bring to a new study they will surmount in a short time obstacles which would have delayed them for months, when they had less knowledge of co-ordinate forms, less taste, less insight, less joy in wrestling with problems and searching into mysteries. If there is not time nor talent nor inclination for all, then I would say prefer Greek to Latin.

The chief thing for the teacher to do is so to teach that the pupil shall enjoy the work. I do not mean that the pupil should be spared hard work and drudgery, or be always expecting to find honey on Hymettus; but do we not all know that the labour of making our way over rotten glaciers and up stony moraines is forgotten when we stand on the crest, and that all the way we go, we think of the joy set before us, when we shall attain to some lofty peak, whence we can see the outstretched heavens and the sunlit earth? For this we must throw ourselves in each language upon literature—the forms of grammar will be the ladder whereby we mount.

And then we shall return to our own native poets and thinkers, with minds enriched by foreign travel, and Milton will be the interpreter of the poetry of the world—of ancient and modern times, Spenser of the mediæval romances, Chaucer of the world of nature, Wordsworth and Coleridge of spiritual philosophy, and we shall feel that we must be worthy of so great

an inheritance, and not trample under our feet the pearls, the precious jewels of speech.

Do I seem unpractical? It is just these ideas that are practical, which we must get our children to see and to feel, and then the burden of earnest, thoughtful labour will seem light, and our English tongue will not be degraded by slovenly pronunciation or the use of vulgar and inappropriate words.

SPELLING REFORM.

By Dorothea Beale.

Let me earnestly beg of teachers not to put aside the question of spelling reform as of little moment, but to do their utmost to bring it about.

Can it be to educators of little moment that learning to read, instead of introducing children to an orderly system, reveals chaos, and interferes with the tendency upon which all science is founded to expect law and order. As Professor Max Müller writes « Every thing that children have to learn in reading and spelling is irrational; one rule contradicts the other, and each statement has to be accepted simply on authority, and with a complete disregard of those rational instincts, which lie dormant in the child, and ought to be awakened by every kind of healthy exercise ».

I find it difficult to express my strong sense of the immense importance of this reform on grounds educational, economic, patriotic. Not only does our cacography oppose an enormous obstacle to intel-

lectual progress during the most important years of mental development, and thus squander brain power on useless work, it is also a waste of money, which is expended by the upper classes in forcing on the children of the poorer a waste of time and — a sort of useless prison-labour.

Dr Gladstone calculates that the average board-school child spends more than 2000 hours in acquiring the arts of reading and spelling, and that the waste of money is over £ 1000000. This was 20 years ago; with increased grants, the loss of money must be far more now. He also calculates the waste of capital in printing unnecessary letters at nearly 20 per cent. This is only one of the many arguments for reform, which he puts most clearly and forcibly.

Most of the richer children have an indefinite amount of leisure in childhood, and they forget how long it took to learn to read, but children in elementary schools groan under a pedantic tyranny, which imposes wearisome and useless labours upon those who might otherwise in their short school time gain such facility in reading, that it would be a pleasure ever after, and the time which is now wasted on spelling, would be available for much beside: Germans have time to acquire foreign tongues, but Englishmen and Frenchmen have not time to acquire them in addition to their own spelling; either language from its simple structure might become a world-wide tongue, and there would be no need of Volapuk.

I quote from Professor Max Müller's article.

« According to a Liverpool Schoolmaster of great experience it takes from 6 to 7 years to learn the

arts of reading and spelling with a fair amount of intelligence. 1. e. about 2.000 hours. A Glasgow schoolmaster writes, « I have taught poor children to read the Sermon on the Mount after a course of exercises extending over no more than 6 hours », and a father writes, « My boy who is a few months more than 4 will read any phonetic book.... and how long do you think it took me to impart to him this power ? Why something less than 8 hours, and that was in snatches of five minutes at a time; his next brother a boy of 6 has had a phonetic education, what is the consequence ? Reading in the first stage was so delightful that he taught himself to read. My eldest boy 11 years old, at a first-rate school has carried off the prize for orthography ». Mr Ellis, who did so much for education writes, « With the phonetic system the Primer is mastered within 3 months at most; careful experiments have established 1) that pupils may be taught to read books in phonetic print in from 10 to 40 hours, and that when they have attained fluency in reading ordinary print, the pronunciation is much improved, the interest in study kept alive, and a logical training of enduring value given.... and they acquire the art of ordinary spelling more readily than those instructed on the old method. »

Let those who think I exaggerate, look intoMiss Soames's introduction to Phonetics, and they will marvel how a foreigner can ever learn to read and write English — she gives the 34 ways in which we write the indefinite ' a ' sound in aloud — the 26 for representing ' or '; the 18 for giving ' sh ' the 20 representing ' n ', 18 for ' k ', and

so on — Pagliardini enumerates the 44 ways in which 'oo' is written and 36 for the sound 'ee' those who have tried to teach foreigners know how hopeless it all seems.

Pagliardini tells of a work published 1861 on French spelling, which gives 163 ingenious rules and occupies 285 pages. It is asserted that 2 lessons a week for 3 years will suffice. How much better writes Pagliardini would these precious hours be spent in studying noble thoughts in books, the history of nations, the mathematical sciences, or the laws by which God governs the universe, or if confined to words, then how much more interesting and intellectual would be their decomposition into their elements, showing their affinity with words in other languages. What a fund of poetry might be found in the metaphors of which words, are the abbreviated forms. All this, now unopened to his view for lack of time, would be revealed.

This may be paralleled by the spelling book of the Meiklejohn series. 'Spelling with sidelights from history.' It contains 150 pages gives many rules, and concludes with one thousand of the most difficult words selected from examination papers.

M. Pitman has done good service in printing and circulating for a very small sum various tracts, and I hope my readers will get some, specially the paper by Prof. Max Müller. Alas reforms are slow when the opinion of many unthinking persons has to be formed, before they can be carried. It needed a pope to reform the calendar.

The *Westminster Review* for Sept. 1897 has an article on spelling reform, urging its great impor-

tance, if English is to be a world-wide language. The impossibility of getting a new alphabet adopted at least for a long time is urged as a reason for pressing minor reforms, the chief being the omission of all useless letters Thus we should leve out awl thos perplexing vowels in lev recev decev belev; and thes changes mit posibly be carid with sum slit efort at wuns, if sum popular orthor wood requir his book too be printed foneticaly.

Some defend our spelling for philological reasons, but it is unanimously condemned by philologists; I name those best known in England — Professor Max Müller pronounces it a national misfortune, and has written an article against it — Professor Sayce and Skeat, Ellis and Sweet, Dr Murray, editor of the Etymological Dictionary, condemn it, and amongst linguists, Pagliardini and scientists, Dr Gladstone.

But the chief reason, that we should press forward this movement is, that only thus does it seem possible to avert the catastrophe foreshadowed in an article on the Queen's English in the *Review of Reviews* for June 1897. Dialectic varieties are arising in the English — speaking Colonies, which, if unchecked by phonetic symbols corresponding with speech, will develop into different languages. The longer we delay, the greater will be the difficulty of agreeing on a common notation — at present the differences of opinion between us and our colonies, and even between us and our American cousins are slight, but those who have heard the English of the States spoken by the children of German immigrants, will recognise the danger.

Miss Soames before her death published reading books in phonetic type, and spent much time and

money in promoting the teaching of English reading on this system, and in introducing to the notice of English people the alphabet of the Association Phonétique Internationale, 11, Rue de Fontenay, Bourg la Reine (Seine).

Such an alphabet would be better than one suitable for English only, but if Pitman's is the only one generally available, it is better to use that for elementary schools, and remember the maxim ' le mieux est l'ennemi du bien ' — For teaching the right pronunciation of foreign languages, *le Maître Phonétique* is very valuable.

Melville Bell's Visible Speech is a physiological alphabet of marvellous ingenuity — but perhaps too elaborate for general use, and the conclusions at which he arrives are not always endorsed by the chief authorities. All students of phonetics will learn much from reading it. — English visible speech, in 12 lessons 50 cents, Volta bureau Washington, gives the essentials of the system — the large work costs 4 dollars.

Great efforts are being made in France to introduce an international phonetic alphabet.

If all could agree on one alphabet, it would be possible for a foreigner to read at sight any foreign language. It is true there would be certain niceties of pronunciation to be taught Viva Voce, but the pronunciation would be very nearly correct at once.

I subjoin a few specimens of writing and the alphabet from ' lə mɛːtr fɔnetik ' (*Le Maître Phonétique*).

The French alphabet is very simple. The consonants are as in English except

HISTORY AS AN EDUCATIONAL SUBJECT.

By DOROTHEA BEALE.

THE second subdivision of Part I. is of great educational value. "History," writes Dr. Harris, "reveals the higher self of man as organised in institutions. For the first time man comes to know his substantial self, when he comes to study history. His little self beholds his colossal self," The Man "writ large" of Plato.

Definition.

"History," writes Dr. Martineau, "enlarges the sympathies, opening fresh continents of character to mental survey, throwing human tones upon the ear in language unheard before; it acts upon the judgments of conscience like foreign travel upon those of perception; it imparts a breadth of view unattainable within a narrow circle. The smaller the scale of the personal lot, the more precious and needful are the friendships of history.

Enlarges sympathies.

"The ground plot of a man's own destiny may be closely shut in, but if he can find his way through vanished cities, hear the pleading of justice, visit the battlefields where the infant life of nations has been baptised in blood; if he can steal into the prisons, where lonely martyrs have waited their deaths; if he can walk in the garden or the porch, where the lovers of wisdom discourse; if the experiences of his own country consecrate the very soil—he consciously belongs to a grander life. Hence the advantage which human

studies possess over every form of science, the sympathy with man over the knowledge of nature. They are an enlargement of moral experience, and call into continual exercise the sense of right and wrong.

"In watching the drama of history, the soul may be purified by 'pity and fear'. 'Here we find examples for judgment, examples of patient suffering, that touch the springs of pity; of selfishness and cruelty that gnaw the heart with honest indignation, of heroic faithfulness that flings across the soul a breeze of resolution, of saintly love that diffuses the very atmosphere of heaven.'"[1]

In history as in science we learn facts that we may trace laws, and history corrects by a larger outlook the erroneous judgments deduced from a limited experience. History too seems specially useful as a complement to the teaching of science. In physics we find inexorable law. Admiration and fear may be excited, but we look on the inevitable; we pass no moral judgment. History and biography show us the Divine government adapting itself, so to speak, to the necessities of man, an education of men and of man, we study a mystery which attracts and baffles us; we are able to predict our world's path in space and time, unable in reference to those larger regions beyond our "little systems"—regions, however, in which we must believe the same laws, physical and moral, to be working.

Supplements the teachings of science.

History corrects the judgment of the world; in its pages we look only at dead men, and we call him happy, not who has been successful, but him who has left the world better

Gives an outlook beyond time.

[1] *Hours of Thought.* Martineau.

because he has lived, and so history reverses the pernicious teaching which puts before the young success as the main object of life, and shows us the difference between noble and pitiful ambitions. The heroes of history are those who endured hardness and lived and died for others, a Heracles, a Theseus, a St. Louis, a Gustavus, a Washington. The villains are those who lived for self, in ease and splendour, and self-indulgence. We find in these, and still more in those in whom the lights and shades are less strongly marked, encouragements and warnings for our own life, and help in interpreting the lives of those around us. How tawdry looks the field of the cloth of gold in the light of a later century! How silly seem those courtiers who carried their "manors on their backs"! "He is worth so much" has a different meaning for the dead and for the living; the dead *have* not, they *are*. Each noble life has left the world richer in spiritual energy, in the power of self-sacrifice, in great ideals, in true riches; there is a treasury of saints, not of a transferable righteousness, but of a transforming, a transfiguring. We can see that no noble life has been lived in vain. "In the sight of the unwise they seem to perish, yet is their hope full of immortality;" the corn which falls into the ground and dies bears much fruit.

Reveals progress through the ages.

Lastly if we include in this study not only the history of men and of societies, but of the intellectual and moral life of man as a whole, not his descent but his ascent, history forms a subject of surpassing interest and energising hope. We find there enacted upon the largest theatre the daily recurring drama of the contest of light with darkness. We learn how man's eyes have been gradu-

ally opened to the wonders of the visible universe, and his soul lifted into the regions of the invisible, his intellectual conceptions enlarged, his higher being developed, and his desires purified; history which discourages, as we look at a narrow tract, strengthens our faith in a Divine order of progress, as we take in the larger regions of time; the waves seem often to recede, while the tide advances, the stars seem to retrograde, but it is because our little world oscillates in space; and so our faith is strengthened, and our hope increased, and we learn not patriotism merely, but we catch something of that enthusiasm of humanity, which shone with unclouded brightness in the Son of Man.

Another use of history, rightly taught, is to train in habits of justice and truthfulness, though it is too often written to serve party ends. It is not easy to be just. The hearts of the young are naturally drawn out to those who suffer. If the Eikon Basilike was not true, we are inclined to say it must have been true, as we look upon Vandyke's picture, see the calm face of the martyr, or read the verses:— Cultivates the judgment.

> He nothing common did nor mean
> Upon that memorable scene,
> But bowed his kingly head
> Down as upon a bed.

We must, however, not let our sympathy with suffering blind us to the fact that Charles failed in his duty as a king—that had he been successful in what he attempted, England must have suffered from the evils under which France subsequently groaned. We must point out that it was his incurable deceit which brought him at last to the scaffold. But neither, on the other

hand, must we ignore the fact that Cromwell trampled on the rights of men, that his was a lawless Government too. We would not, however, have that sham impartiality which paints all men of one colour and height, which is incapable of conceiving a hero, and contemplates crime with calmness, remarking there are always two sides to a quarrel. Need I say that throughout, the teacher must stir noble enthusiasms, a worthy emulation, admiration for true manliness, for virtue, rouse sympathy for the oppressed, zeal for right—show that the history of each nation is that nation's Bible—the Book which tells of the Heavenly Father's care for it, as manifested in the incidents of its life? If addressing higher classes, the teacher will point out, as opportunity offers, that each had a work to do in the world, Hebrew, Greek, Roman, as Miss Wedgwood has shown so well in the *Moral Ideal*.[1]

Stirs right enthusiasm for heroic men.

The young must learn, too, that the great principle is found everywhere, that what we sow we must reap in the moral as well as the physical world—that the selfish neglect of the poor brought about the Black Death and gaol fevers, that the selfishness, rapacity and immoral greed fostered by England's unjust claims on France, brought its own punishment; this was seen when the Hundred Years' War ended in the internecine strife of the fifteenth century, and led to the extermination of a selfish aristocracy. So too the degradation of the higher classes, say in the eighteenth century in France, which led them to regard the lower classes

Shows the disintegrating power of unrighteousness.

[1] *Moral Ideal*, by Julia Wedgwood. Trübner.

as scarcely human, brought about the fearful retaliation of the Revolution. Or again the wealth of Spain, filling the nation with pride and haughtiness, was actually her ruin; by persistently destroying or expelling, by war or persecution, all the nobler spirits, the nation was degraded in a few centuries. Of course these latter lessons will be more suited to a higher class, but something of it may be taught early.

Questions of right and wrong will ever be arising. What ought to have been done under such circumstances? Is rebellion ever justifiable? and when? What forms of government are best? is there an absolute best? We shall see how short-sighted is crime when we come to the murder of Cæsar, of Henry III., Henry IV., William the Silent. The teacher will not omit to look at the historical clock, when asking whether acts were right or wrong. We must do justice to devotion, while pointing out errors and crimes; we must be warned by seeing that wrong deeds are often done by those who mean well; we must learn that though error and ignorance is evil, and we must fight against both, yet that good often comes of the honest working out even of mistaken opinions; that through illusions we gain the vision of truth.

Teaches by experience.

The many experiments of the past show us too that evils which exist in a community cannot be cured by merely changing a form of government, or getting rid of this man or that man by violence; to do this is only to sow dragon's teeth. A nation is made up of individuals, and only by individual virtue can salvation come; so people now seek to bring about the well-being of nations by education rather than by revolution, because freedom

without sense to use it is an evil, and a nation that is truly free will deserve and obtain free institutions. As Mazzini says:—

Teaches the solidarity of man

"We must convince men that they are all sons of one sole God, and bound to fulfil and execute one sole law here on earth; that each of them is bound to live not for himself, but for others; rights can only exist as a consequence of duties fulfilled, and we must begin with fulfilling duties in order to achieve rights. We can obtain our rights only by deserving them through our own spirit of love and sacrifice. If we seek our rights in the name of duties, we shall obtain them. If we seek them in the name of egotism, or any theory of happiness and well-being propounded by the teachers of materialism, we shall never achieve other than a momentary triumph, to be followed by utter confusion."

One may point out the gradual progress which, with occasional recessions, has, we trust, been made. One may stir in the young patriotism, and an enthusiasm of humanity, and make them feel a desire to do what they can to amend the evils of their own time.

and the duty of each to the community.

Lessons of political economy seem to me more important for girls than the legislative contests of constitutional history. They cannot enter into these with the keen interest of boys, who may themselves one day be lawgivers. All should be taught that a selfish, wasteful citizen is a disgrace, a sort of moral caterpillar —learn that selfishness, sensuality, falsehood, under whatever disguises, are detestable, whilst a self-devoted life is a heritage for ever. We should especially recognise the faults of our own nation in past times,

and in the present too; we should desire the elevation of the degraded classes, and each should feel that his life and example has at least some power, that each of us is responsible to men as well as to God, that it is by noble enthusiasms, by self-devotion, by giving up one to another that human society is possible.

History, like geography, can be approached two ways:—

Methods of approaching the subject.

1. We may take the map of the world, indicate its leading features and its political divisions.

2. We may take a small tract, realise by description the form and beauty, the flora and fauna, the temperature, the snowy peaks, the rushing rivers, the silent stars, think it all out, until we feel at home in the land, work up through details of topography to clear conceptions.

In teaching history, I think we ought to take some kind of time-map, mark out in it a few of the most prominent recorded facts, tell something of the heroes, after whose names tracts of time have been called, trace out a few of the leading empires, give landmarks.

With juniors.

Then we may, after showing the position of a certain period in the world-chart, work it up in detail. The way in which each period should be treated will depend much on the age of the class. With young ones, the teaching will be more narrative and biography; the memory and imagination will be chiefly called into play. Some outline or short history should be read by the child, the most prominent events, etc., should be entered in a special historical map. The chronological, as well as the geographical atlas, should always be at

hand. The teacher should go quickly round the class, asking each child a few questions, just to ascertain whether the work has been properly prepared, then she should fill up herself such parts as will come home to the class. For young classes, though some passages from good histories may be read, the teacher must be prepared to give a great deal *viva voce*. Little children do not take in so well what is written for older people, the words are not adapted to them, nor the mode of expression. Besides, the teacher's eye is occupied, she does not see whether she is holding the attention of her class. True, her words may not be quite well chosen, but she will be able to make the narrative more life-like to those whose minds she knows. But she must on no account try to learn it up. If she would relate well, she must conjure up the scene before her own mind, carefully paint in the details, and then describe her own vision, watching the children to see if they, too, take it in.

But all must not be *told;* as far as may be, children should be led to anticipate. Thus in a narrative of a campaign, generally so dry and unprofitable, the children should be led to consider what were the aims, what would be the best way of carrying out operations, what posts would be occupied, which leader chosen, how the money would be raised, etc. They will take great delight in finding out these things, and not easily forget what they have discovered; it will accustom them to read in an intelligent way, so they will be able to predict to some extent what people are likely to do.

The elder classes should read some large history, if possible some original authority, and thus learn to read for themselves, to examine the statements set before them, and to sift evidence.

With senior classes.

The characters of Richard II. and Richard III., of Mary Queen of Scots and Elizabeth, of the Stuarts and Cromwell, of Laud and Bacon, will form good exercises in the discussion of probabilities, and teach caution and moderation in the judgments of daily life. For elder classes, too, we may make great use, not only of Shakspere, but of the best historical novels. For the teaching of higher classes I may point to the following papers and add also a chapter on time-maps.

TEACHING MODERN HISTORY TO SENIOR CLASSES.

By Alice Andrews.

> Girls,
> Knowledge is now no more a fountain seal'd;
> Drink deep, until the habits of the slave,
> The sins of emptiness, gossip and spite
> And slander, die.
>
> *The Princess.*

Introductory.

IN teaching history our aim should be not to miss the "spirit" of the period we are taking. We have to inquire what forces are at work moulding the character of the nation, and to estimate the results they produce. We have to find the place our period holds in building up the national history. Each period has a heritage from the past, each hands on its legacy for the future—of warning from failure or from a success which is more disastrous than failure—of encouragement from victories, not necessarily of the battlefield, and which perhaps were won at the cost of noble lives willingly, even joyfully, offered.

There have been periods of ignoble wars, such as the Hundred Years' War, when Englishmen were brutalised by murder and rapine, ruining a people too deeply sunk in misery to defend themselves. And retribution overtook the nation as it overtakes the individual. Our own Wars of the Roses were the fruit of the unjust wars in France. There have been

periods of ignoble peace, when "peace with dishonour" might have been England's motto, when foreign troops were subsidised to protect the shores that Englishmen were too craven-hearted to defend themselves, when enthusiasm was ridiculed as "mock patriotism," and political reformers were nicknamed "boy patriots". Corruption was reduced to a system, and Walpole believed that every man had his price. The Church was paralysed by spiritual deadness.

Individual men stand out as warnings or examples. Richard II. appears first as full of noble impulses, a born leader of men, but his crime determines his life. To rid himself of the man who *knows* his crime, he banishes Norfolk for life; the other, who suspects it, he banishes for a term of years, and this is reduced at the intercession of old Gaunt. Either the punishment was, or was not, just. If just, it ought not to have been reduced on petition; if unjust, it ought never to have been inflicted. Henceforward Richard rapidly deteriorates: he seizes Gaunt's lands in spite of his promise to the absent Bolingbroke, in spite of the warning of his uncle York:—

> Take Hereford's rights away and take from Time
> His charters and his customary rights . . .
> You pluck a thousand dangers on your head,
> You lose a thousand well-disposed hearts,
> And prick my tender conscience to those thoughts
> Which honour and allegiance cannot think.

Richard has himself set the example of disregard of others' rights, and makes it possible for Bolingbroke to return in the name of justice and raise the country against the king.

Previous knowledge.

The teacher of history in the older classes ought to be able to assume a correct knowledge of the most important facts and dates at least in English history. These are very easily learnt in childhood and most difficult to acquire by older girls. Those who have been trained on the historical chart are acquainted with the main characteristic of each century, and the principal events in it, and have no difficulty in grouping fresh knowledge round central well-known facts, just as the geographical student can fill in with increasing completeness a map from memory. Comparatively few are trained in any knowledge of foreign history, and I have known not a few grown-up girls find the greatest difficulty in mastering the leading names and events in French and other European history. In this respect other nations are beyond us. Foreign girls, both French and German, are trained to connect the history of their own country with the general course of events, and know the facts of European history as a whole. The absence of this knowledge in English girls makes the study of foreign policy unnecessarily difficult to them.

Continuity of history.

In outline history, paint with a thick brush. "One can't see the wood for the trees in it" might too often be the criticism of the pupil on a lesson. The conscientious teacher tries to omit nothing, the consequence in the pupil's mind is blind confusion. The principle of selection rules here if anywhere. We must aim at avoiding the defect which Lord Acton denounces as "the want of an energetic understanding of the sequence and real significance of events, which . . . is ruin to a student of history. It is playing at study (he continues) to see nothing but

the unmeaning and unsuggestive surface as we generally do." We want instead to trace in broad outline the continuity of history—for instance, look at the Wars of the Roses in this light. How do they stand in relation to constitutional development? While the nobles were at war, the commons were gaining victories, bloodless it is true, but more lasting than any gained on battlefields. It was a time of immense constitutional development. And yet these victories were practically worthless for the moment. What advantage was it to the victim of the "overmighty subject" that the Statute Book provided for his rights and liberties? The "Paston Letters" give a vivid picture of the impotence of the ordinary subject to get the law enforced. What the country needed was strong government, not political privileges. "Constitutional development had outrun administrative order," had outrun, that is to say, the general point of development reached by the nation at large, and the Tudors came in, so to speak, on the programme of strong government. The Tudor rule represented the two great principles of orderly administration and even-handed government. It needed a dictatorship to accomplish the task. The task was completed at the Armada, and the country took back the trust at the accession of the Stuarts. That the Stuarts failed to recognise this, was the cause of the long constitutional struggle that culminated in the Civil War. Once more constitutional development proceeds, but now the nation is keeping pace with it.

Topical or sectional arrangement.

The subject of sectional as opposed to chronological teaching seems to belong here, for upon it depends the very essence of clearness in teaching. If pupils have before them the

time-map, or chronological chart, already referred to, the teacher can with greater freedom treat the subjects sectionally, for before the eye of the pupil are grouped all the parallel events in each square representing some definite space of time. To teach chronologically may seem more accurate perhaps, but really too often produces hopeless confusion in the mind of the pupil—the thread is lost in taking up many different subjects, *e.g.*, in Elizabeth's reign, I would take as separate sections her relations with Scotland, necessitating a review of Scotch affairs generally, and the series of plots for releasing Queen Mary; Elizabeth's policy with regard to (*a*) the Anglican Church; (*b*) Roman Catholics; (*c*) Protestant Nonconformists; her Irish policy; her foreign policy illustrated by her "courtships"; the domestic history of the reign and so on. The different sections touch sometimes, but it only adds to the interest to illustrate the new section from one already known. So in the Seven Years' War, I would not follow the course of events for each separate year on the Continent and in America and in India, but I would take the whole course of the war in Europe, explaining why it was not only justifiable but a stroke of genius in Pitt, to do what he had himself denounced in the "Hanover-troop minister," and by utilising foreign troops for England's war on the Continent, set her free to follow her true interests in the colonies, and I would trace as separate sections the laying of the foundations of her world-empire in India and in Canada.

Syllabus of lessons.

This method of teaching presupposes that a scheme has been drawn out for the course. If possible the scheme should be given to the class in the form of a syllabus of the lessons. If

printing is too expensive, it is worth while to cyclostyle copies oneself. The value the class attaches to them is sufficient reward for the trouble, and they become a model to the girls on which to arrange their own study of history in post-school days. Examples of such a syllabus for English history and French history lessons will be found at the end of the paper.

Illustrations: (*a*) Historical atlas.

The historical map ought to be the inseparable accompaniment of the history lesson, and in this respect there is nearly everything to be wished for. Good wall maps with bold colouring in which the outlines of different territories can be seen from a distance, and in which the names are clearly printed in English, have yet to be found. To use a modern map in doing French outlines or other continental history is most misleading, and yet too often this is all the teacher has at hand. There is Sprüner of course, but even if the school can afford these expensive maps, they are not very satisfactory for the ordinary class; the colouring is not distinct, and the map is so overcrowded with names that it is difficult to find at a glance the places one wants. They are rather for private and minute study than for class work. The publisher's explanation is that there is not a sufficient demand to make it worth while to bring out historical maps, an incidental illustration of how little attention is given in English schools to continental history, while a class map of the Roman Empire can be found everywhere. At present the teacher is forced to make her own maps. If she is happy enough to have old pupils with a talent for map-drawing, she can gradually make a collection of maps enlarged from those in good histories; the maps in Kitchin's *History*

of France are invaluable for this purpose, but Kitchin provides nothing for the periods of the Italian expeditions, and these have to be adapted from Sprüner.

Gardiner's *Student's Atlas* provides what is necessary for the pupil in the English history class; there is a small cheap German atlas for general history (Putzger, 2 marks), but it is not very satisfactory for the ordinary English schoolgirl, the difference in the names is puzzling. What is wanted is a student's atlas for continental, especially French history, at a reasonable price.

But even given the atlas, it remains for the teacher to find an unfailing receipt by which to ensure its use.

(*b*) Blackboard.

Not the least part of the value of a syllabus in the hands of a pupil, is the saving of time it makes in the lesson, otherwise the blackboard must be used for unfamiliar names and words. The merest glance through a pupil's rough notes of French history will be a sufficient proof of this.

(*c*) First-hand acquaintance with authorities.

Besides the text-book, which every pupil should possess, no teacher of older girls will be satisfied unless they read at least passages from the authorities on the period. The difficulty is to provide a sufficient number of copies for a large class, or any copies at all, beyond those possessed by the teacher or the school: this difficulty, however, may be met. There are always girls who are glad to have good books suggested for Christmas or birthday presents, and who begin a really nice library of their own in this way. But a class-library can be formed without much trouble. The nucleus of a class-library being made by the necessary books for one year's work, the girls can be asked to

leave a similar legacy for their successors. A list of books wanted, with their prices, can be prepared, and it will be found that several will combine to give really expensive books, and in this way the class can command the use of sets of Stubbs, Froude, Gardiner, Ranke, Lecky, etc., besides smaller books like the Great Statesmen Series.

Since it is impossible for girls with their limited time to read the whole of the big histories, the teacher will find it a valuable practice to dictate the numbers of the pages (in one or more volumes) bearing upon her lesson, which the girls should read. They are thus trained to use authorities, and this is being recognised more and more as of the first importance. There was a time when girls depended entirely upon their notes, and the misspelling of names of historians showed that their knowledge of great writers was second-hand. But when they get a first-hand acquaintance with historians like Froude, Gardiner, Seeley, Ranke, Lecky, they are insensibly being trained to be satisfied with nothing but the best.

The period should be studied by the teacher, and to a certain extent by the pupil, in contemporary writers. Chronicles are delightful reading. Who that has once learnt to know Saint Louis of France in the pages of his faithful seneschal, can fail to breathe the very atmosphere of the time? De Joinville shows him what a later preacher called him, "the most loyal spirit of his age". Again no weighty dissertations on the small account in which human life was held in the Middle Ages would be so convincing as the incidental contemptuous remarks of the courtier-chronicler Froissart. The ex-

(*d*) Contemporary writings: chronicles.

quisite courtesy to a De Ribeaumont was quite compatible with the halters for the six citizens of Calais. And to take one more illustration quite late on in the centuries—what a gulf separates ante-Reform times from our own! How expressive of the haughty landed aristocrat are these words of the Duchess of Buckingham after condescending to listen to the Wesleyan preaching: "I thank your ladyship for the information concerning the Methodist preachers. Their doctrines are most repulsive and strongly tinctured with impertinence and disrespect towards their superiors, in perpetually endeavouring to level all ranks and to do away with all distinctions. It is monstrous to be told that you have a heart as sinful as the common wretches that crawl the earth. This is highly offensive, and I cannot but wonder that your ladyship should relish any sentiments so much at variance with high birth and good breeding."

Full lists of contemporary writers will be found in Traill's volumes on *Social England*, which as "a record of the progress of the people in Religion, Laws, Learning, Arts, Industry, Commerce, Science, Literature and Manners, from the earliest times to the present day," meets perhaps the greatest want of the ordinary teacher, to whom no one general history of social progress was before accessible.

(*e*) Historical pictures.

As illustrations there are also historical portraits, contemporary pictures of historic scenes, and pictures of costumes. Most schools now subscribe to the "Art for Schools Association," and can make a very good portrait gallery of their own. The splendid collection of historical costumes designed by Mr. Lewis Wingfield for the Healtheries

can still be seen, I believe, and a few of them have been reproduced by him in a book with descriptive letterpress. Exhibitions, like the Tudor and Stuart, are most valuable to the realisation of history, and visits to historical buildings are within the possibilities of most, and add great zest to many a holiday both for teachers and girls. It is impossible to forget the circumstances of the Dauphin's coronation at Rheims, after staying where Joan of Arc stayed and standing in the cathedral, where she witnessed the fulfilment of her mission.

(*f*) Historical poems, Shakspere's plays, historical novels.

Passages from historical poems or from a Shakspere play often add to the interest of a lesson; as the challenge-scene from Richard II., the trial-scene from Henry VIII., Milton's sonnet on the massacre in Piedmont, Spenser's Gloriana and the false Duessa for Elizabeth and Mary Queen of Scots. And in quite modern history Mrs. Hamilton King's *Disciples*, Swinburne's *Songs before Sunrise*, Mrs. Browning's *Peace of Villafranca*, all give expression to the passionate longing for freedom of Italy.

Perhaps nothing makes history more real than a good historical novel. Bulwer-Lytton's *Last of the Barons* makes the figure of Warwick as lifelike as that of any minister of our own day. Edward IV., Clarence, Richard III. have each their individuality, and so has that shadowy prince who was killed at Tewkesbury, while Isabella Neville stands out for ever distinct from her gentle, timid sister Anne.

John Inglesant gives the very spirit of the Charles I. period—cavaliers and ladies coquetting with the classics in the learned Oxford halls, the devotion, even to the

death, of the Jesuit-trained John Inglesant, and the midnight apparition of the murdered Strafford to the king, for whom he had laid down his life.

It is quite worth while to put up a list of historical novels bearing on their period, for older as well as for younger classes.

How are we to test the work done by the pupils?

Home-work: (*a*) *Viva-voces.*

Lord Acton quotes from Sir W. Hamilton: "I must regard the main duty of a professor to consist, not simply in communicating information, but in doing this in such a manner and with such an accompaniment of subsidiary means, that the information he conveys may be the occasion of awakening his pupils to a vigorous and varied exertion of their faculties".

By means of *viva-voce* questions and paper work, the class should be tested between each lecture. The object of the teacher is to find out with as little expenditure of time as possible, that the work set has been thoroughly done. I know no better means of doing this than by what are called written *viva-voces*. The teacher prepares two sets of questions called respectively A and B. The alternate girls write the answers to the A and B questions in small exercise books which they keep for the purpose. They rule two margins, the left-hand for the number of the question, the right-hand margin is used by the corrector. Ten minutes can test an hour's lesson. The books are changed so that the Bs correct the work of the As, and have to attend to the answers of the questions they did not do. The teacher repeats aloud the answer to each question. Each corrector signs her name and puts the mark obtained. The teacher, when she looks

through the books afterwards, can thus bring home any careless correction to the right person, and anything like favouritism in correcting is prevented. This *viva-voce* work ensures accurate knowledge of facts, and I have known girls find it sufficiently useful, to continue the same system among themselves after they have gone up to the university.

The most valuable exercise for the pupil is the writing of essays. These may begin on a subject already dealt with in class (care being taken that the essay is not a reproduction of notes of the lesson), but the pupil will soon be trained to read and think out for herself subjects which she has not previously heard discussed. She will learn experimentally what Lord Acton calls, "those shining precepts which are the registered property of every school, that is to say, learn as much by writing as by reading; be not content with the best books, seek side-lights from the others; have no favourites; keep men and things apart; guard against the prestige of great names; see that your judgments are your own and do not shrink from disagreement; no trusting without testing; be more severe to ideas than to actions; do not overlook the strength of the bad cause or the weakness of the good". (*b*) Essay-writing.

The giving back of the essays ought to be a very valuable lesson. Happy passages should be read aloud, weak passages criticised, each paper estimated as a whole, and the pupil ought to leave the class, feeling that if the work were to be done again, she at least understands the general drift of the subject and could treat it more adequately than before.

I venture to illustrate my meaning, the subject set

being a discussion of the policy of Francis I. in his relations with Charles V. The essay should show that Francis I., like his predecessors in the Italian expeditions, Charles VIII. and Louis XII., failed to realise in what direction lay the true interests of France, with regard to the new problem of balance of power. By entering into personal rivalry with Charles and striving for territorial conquest in Italy, Francis lost the opportunity which should have belonged to France, of controlling the European situation. If he had only been content with securing gateways into Italy and making alliances with the northern Italians and German Protestant princes against Imperial encroachments, he would have gained the casting vote in European affairs and have held the key to the problem, which it was not permitted to France, till the time of Richelieu, to solve.

Post-school work.

A word or two as to the way in which the teacher can help her old pupils to read history. There are a fortunate few who pass on to the universities. An increasing number can attend University Extension lectures and become members of a local Students' Association. But it is those who are not within reach of any local organisation, who are glad of a little help. To these, when they first leave school, an old girls' Reading Society is generally welcome. The regular reading it requires is a training in methodical arrangement of time, and schemes of reading, with plenty of choice, are a help to those who have hitherto had all their intellectual work arranged for them. Teachers have sometimes found it possible to take up parties to the Summer Extension meetings. Parents are willing to let their daughters go with re-

sponsible guardians, and the preparatory reading is a great interest, besides the stimulus that the lectures themselves give to subsequent work at home.

The educational value of historical study does not belong to this paper, but I end by quoting three passages, which are full of encouragement to the teacher of history. They are referred to by Lord Acton in his famous lecture at Cambridge. Conclusion.

"The study of modern history is, next to theology itself and only next in so far as theology rests on a divine revelation, the most thoroughly religious training that the mind can receive." (Bishop Stubbs.)

"History is full of indirect but very effective moral teaching. It is not only, as Bolingbroke called it, philosophy teaching by examples, but it is morality teaching by examples. It is essentially the study which best helps the student to conceive large thoughts. It is impossible to overvalue the moral teaching of history." (Sir J. Fitch.)

"The object (in history teaching) is to lead the student to . . . take interest in history not as a mere narrative, but as a chain of causes and effects, still unwinding itself before our eyes and full of momentous consequences to himself and his descendants, an unremitting conflict between good and evil powers, of which every act done by any one of us, insignificant as we are, forms one of the incidents, a conflict in which even the smallest of us cannot escape from taking part, in which whoever does not help the right side is helping the wrong." (Mill. Inaugural Address.)

SPECIMEN SYLLABUS OF ENGLISH HISTORY.

Foreign Policy of Elizabeth.

Introductory.—Keynote of the period; dynastic alliances. Power of House of Hapsburg built up on political marriages, even England threatened with absorption by the Hapsburgs, as a consequence of Mary Tudor's marriage to Philip, and though Mary's death made "a great rent in the Hapsburg net, in which England was enmeshed" (Seeley), yet Philip long struggled to re-establish the Hapsburg dominion in England, and this, according to the fashion of the time, by marriage. "Courtships of Queen Elizabeth" begin January, 1559; Philip offers his hand to Elizabeth: "The more I reflect on this business, the more clearly I see that all will turn on the husband which this woman will choose" (De Feria). Other suitors in Hapsburg interest, Philibert of Savoy, Archdukes Ferdinand and Charles—Elizabeth encourages Hapsburg suitors—could thus keep English Catholics in hand in spite of innovations, and get better terms from France in Treaty of Cateau Cambrésis, April, 1559, France believing her supported by Spain. But England's safety from Hapsburgs largely due to her danger from Valois. The Valois had secured Scotland, and claimed England through marriage of Mary and Francis. For Philip to overthrow Elizabeth would mean to clear the way for Mary of Scots: it was not till he could come as Mary's heir, that he openly made war on England.

Period I. The Scotch Period, 1558-1567.

(i.) 1558-1564, IN WHICH A BASIS IS LAID FOR THE UNION OF ENGLAND AND SCOTLAND.

England and Scotland both under queens; both had to choose between a power based upon the wishes of the nation, and a power supported by foreign help. Elizabeth chose a national position: "took a course visibly full of danger, a course in which success was only possible by courage and heroic endurance, but in which success, if it came, might be splendid, and might raise the nation itself to greatness". Mary, on the contrary, brought her subjects under a foreign yoke. Since Mary of Guise's regency was a High Catholic rule, the Reformation in Scotland took the form of a *national* movement, and the national party turned towards England for help. "The first achievement of Elizabethan policy lay in this, that she called out a great Reformation party in England and Scotland at once, and thus laid the foundation of the union of England and Scotland."

Elizabeth's self-justification in helping subjects against their sovereign: that she was maintaining national independence against a foreign power. Arran becomes Elizabeth's suitor in Protestant interest. January, 1560—Treaty of Berwick—importance. Elizabeth "put herself at the head of the national religious movement in Scotland"; "in consideration of the attempt to annex Scotland to the French crown, she promised to aid the Scotch to drive out the foreign invaders". Success of Elizabeth's policy; French troops recalled. July—Treaty of Edinburgh ends the government of Scotland by the French; December—death of Francis II. severs the union of French and Scotch crowns. 1561—Return of Mary to Scotland; she refuses to ratify the Treaty of Edinburgh, and sets to work to build up an Anglo-Scotch party in the interest of the Counter-Reformation.

(ii.) 1565-1567, IN WHICH THE DANGER IS OF THE UNION OF ENGLAND AND SCOTLAND UNDER MARY AGAINST ELIZABETH.

1565—Marriage of Mary and Darnley—importance: Mary puts herself definitely at the head of the Catholic party in England. 1567—Murder of Darnley; marriage with Bothwell; Lochleven; battle of Langside; collapse of Counter-Reformation in Great Britain; prospect in James of a solution for England of both problems of succession and religion.

Period II. The French Period, 1567-1585.

Danger lest France or Spain, or both, make war on England to release Mary and secure the Catholic succession, but hands of both tied at home, and Elizabeth's efforts directed to keeping them so. To that end, sends help to Huguenots in Wars of Religion, and to the revolted Netherlands.

France alarmed by victory of Lepanto (1571), makes advances to England. Courtship of Anjou, 1570-72, and of Alençon, 1572-84. "Matters were indeed in a critical position for England; the Ridolfi plot was brewing, the English Catholic nobles in a ferment, and the Pope, Philip, the League and the Guises ready to turn their whole power to the destruction of Elizabeth." 1572—Treaty of Blois, pledging Charles IX. and Elizabeth to give informal aid to the revolted Netherlands. The St. Bartholomew; marriage negotiations interrupted. 1574—Don John, Governor of the Netherlands, grasps the necessity of the overthrow of Elizabeth as a preliminary to reducing the Netherlands, and aims at himself marrying the Queen of Scots and securing England. "The true remedy for the evil condition of the Netherlands . . . is that England should be in the power of a person devoted and

well affectioned to your Majesty's service." 1575—The Netherlands offer sovereignty of Holland and Zealand to Elizabeth; she declines. 1578—Flemish appeal to Alençon to lead them; he accepts in reliance on England; Elizabeth's policy is that Alençon shall be under English, not French, patronage, and she poses before Europe as his affianced bride. 1579 and 1581—He visits England for supplies. 1582—Alençon invested with sovereignty of the Netherlands; Elizabeth's connection emphasised by presence of Leicester and Sir P. Sidney. 1584—Alençon expelled from Netherlands; his death. "Elizabeth had begun her long marriage juggle in 1559 in hourly danger of being overwhelmed and crushed by her own Catholic subjects in union with one or other of her great continental neighbours. She ended it in 1583, triumphant all along the line, with both her rivals crippled and distracted, whilst she really held the balance of peace and war of Europe in her hands."

Period III. The Spanish Period, 1585-1603.

(i.) To 1596, when England, France and the Netherlands fight Spain either Separately or in a Concert which is secret.

Counter-Reformation in France represented by the League, the anti-dynastic party; Pact de Joinville between Philip and the League, after murder of William of Orange, for extirpation of heresy in France and the Netherlands; importance of 1585 in English policy; Alençon gone, Elizabeth must act openly if Netherlands are to be saved. Only military movement as yet helping Scotch in 1561. With 1585 begins what is meant by the "Elizabethan Age". Pause to estimate Elizabeth's policy. Froude finds no clue but inconsistency—really a consistent inconsistency. Seeley's estimate: "There are emergencies in which a persistent abstinence from action, a kind of resolute irresolution, is the only sound policy. . . . Everything at her accession was in a sort of suspense. Whether the nation was Catholic or Protestant, by what title she herself reigned, who would be her own successor, and whom she should marry—all was undefined." Elizabeth really understood popular government; she gave her people twenty-six years of peace, in which they learnt to know themselves and what they wanted. 1585—Siege of Antwerp; Netherlands in extremity; offer sovereignty to Elizabeth; she refuses; Philip tries intimidation by wholesale arrest of British sailors; war inevitable. Leicester's expedition; his blunders; fall of Antwerp; Zutphen; Elizabeth also lets loose her "Knight of the Ocean"; Drake's expeditions, 1577, 1585, 1587; execution of Mary Queen of Scots. "The execution of

Mary Stuart in the greatest degree, and the campaign of Leicester in a secondary degree, together with the adventurous voyages of Drake, brought on the open war between Elizabeth and Philip." 1588—Armada; causes of failure: (*a*) superiority of English ships and English sailors; (*b*) English guns heavier and better served; (*c*) unfavourable winds causing delay and then destruction; (*d*) unfitness of Parma for command. "But all said and done, the victory was one of men and tactics more than materials." "The Armada was not defeated by a storm, but at Gravelines, on Monday, 29th July; and the enterprise was defeated when Parma failed to bring up his flotilla." Results of Armada: (*a*) gave England a new position in Europe; (*b*) secured her from danger of future invasion, and consequently (*c*) enabled Elizabeth to turn her attention to the divisions that weakened the English Church; (*d*) gave the nation leisure for the struggle between Crown and Parliament, which only ended with William III. 1589—Elizabeth's Counter-Armada; Drake's advice, "better cheap" than awaiting renewed attack. Spain's power broken, the religious question is fought out on a new battle-ground; succession struggle in France; League helped by Spain against Henry of Navarre; Arques; Ivry. 1591—English forces under Essex to help Henry of Navarre. 1595—Henry publishes declaration of war against Spain.

(ii.) 1596-1598. FRANCE, ENGLAND AND NETHERLANDS UNITED IN A FORMAL COALITION OF ONE CATHOLIC AND TWO PROTESTANT POWERS AGAINST THE COUNTER-REFORMATION.

1596—Elizabeth makes a formal alliance offensive and defensive with Henry IV. and the States against Spain, and sends expedition under Howard and Essex against Cadiz; the "Trafalgar of the Elizabethan War" (Laughton). 1597—Essex and Raleigh make the "Island voyage" against Spain.

(iii.) 1598-1603. COALITION DISSOLVED. PHILIP III. AGAINST ELIZABETH AND NETHERLANDS.

1598—Henry IV. deserts his allies and makes peace with Spain in Treaty of Vervins. Philip III. continues war against Elizabeth in order to use Ireland—in revolt—as basis of operations for the Counter-Reformation against England. Danger from Ireland increased by treason of Essex. 1602—Spanish expedition lands in Ireland; joins Tyrone against Kinsale; defeated by Mountjoy. 1603—Elizabeth increasingly hostile towards Spain till her death.

Results of Elizabeth's Policy.

1. She gave England twenty-six years of peace, in spite of the distracted state of things abroad, and by this means (*a*) the religious question, (*b*) the succession question, were settled without civil war.

2. By creating a new mental atmosphere, she gave England a new national temper, which found expression in a national poetry. Shakspere's "jubilant patriotism":—

> "This England never did, nor never shall
> Lie at the proud foot of a conqueror. . . .
> Come the three corners of the world in arms,
> And we shall shock them; nought shall make us rue,
> If England to herself do rest but true."
>
> —*K. John.*

> "This royal throne of kings, this sceptred isle . . .
> This precious stone set in the silver sea . . .
> This land of such dear souls, this dear, dear land."
>
> —*K. Richard II.*

And the passionate devotion to Elizabeth as the embodiment of the national greatness:—

> "She shall be loved and feared; her own shall bless her·
> In her days every man shall eat in safety
> Under his own vine, what he plants, and sing
> The merry songs of peace to all his neighbours."
>
> —*K. Henry VIII.*
>
> Elizabeth the Gloriana of Spenser.

3. She saved England from absorption by Spain or France, and from fear of future invasion.

4. She created the monarchy of Great Britain by laying the basis of union between England and Scotland.

5. She made England insular, but counterbalanced the disadvantages of insularity by encouraging maritime expansion.

SYLLABUS OF LESSON ON RICHELIEU.

1610. *Louis XIII.*

Difficulties of Regent Mary de Medici.
"The day of Kings is past, that of Grandees and Princes has arrived."
Her Spanish policy. Concini.

1614. States-General, last of old Régime. Louis assumes government. Fall of Concini. Rise of De Luynes. Queen Mother becomes centre of disaffection. Guise. Bouillon. Mayenne Epernon. Huguenots.

1622. Peace of Montpellier. Huguenots have only Rochelle and Montauban.

1624. Entrance into power of Richelieu.

RICHELIEU. Born a leader of men. Genius of conception, force of will. Ideal, absolutism. Obstacle, feudal nobility; destroys their political vitality by increasing power of monarchy. 1. Substitutes Intendants for great Governors of Provinces. 2. Destroys feudal strongholds. 3. Brings nobles under the law; duelling, Montmorency; peculation, Marshal de Marillac; conspiracy, Cinq Mars. 4. States-General never meet. 5. Parlements restricted to judicial duties. 6. Heavy taxation. Cultivates three powerful alliances: 1. Men of letters; 2. Favour of commons; 3. Love of national glory.

Foreign Policy. To substitute influence of France in Europe for Austro-Spanish power. Founder of an "occidental" policy. Two things necessary: 1. Balance of power; 2. Mutual religious toleration. Difficulties at home: 1. Spanish sympathies of Anne of Austria; 2. Huguenot struggles for independence.

Periods of Richelieu's Rule.

I. **The Valtelline Period; 1624-26.** Richelieu enters European politics. Importance of Valtelline as connecting link between Austro-Spanish

dominions. Seized in defiance of Treaty. Interference of Richelieu. Huguenot revolt. T. Montpellier pacifying them while he concludes Valtelline question in T. Monzon.

II. **Period of La Rochelle, 1626-28.** Richelieu crushes all opposition at home to clear his way for decisive interference abroad. "La conspiration des Dames." Vendome in Brittany. 1627. Buckingham's expedition to Rhé. 1629. Fall of La Rochelle and Montauban.

III. **Period of absolute supremacy at home, 1629-35.** Re-enters European politics, but only as a secondary power, in Thirty Years' War. France acts again in Italy. Succession in Mantua and Montferrat. Valtelline question reopened, and again settled in favour of France. Day of Dupes, 11th Nov., 1630. T. of Cherasco, 1631. Intrigues of Gaston of Orleans with enemy. Richelieu acts with Gustavus Adolphus, the "Protestant Crusader". Interests of France move to Lorraine border. Death of Gustavus indirect advantage to France. Richelieu's terms with Bernard of Weimar. 1635. France declares war against Spain.

IV. **Period of France's supremacy in Europe, 1635-43.** 1636. Recovery of Corbie from Spanish. 1638. B. Rheinfeld. Fall of Brisach. 1639. Death of Bernard of Weimar. "Turning point of the contest," from a useful ally was becoming a dangerous rival. Richelieu secures Alsace. Conspiracy of Cinq Mars.

1642. Death of Richelieu. Rise of Mazarin.

LIST OF BOOKS.

The following lists have been drawn up with the help of several teachers of history, and are intended for the practical work of the school. They aim at giving the chief authorities for each period, besides other books dealing with special subjects. Where possible, the publisher and price have been given. Those who want more exhaustive lists and desire original authorities can find them in the syllabuses of the University Extension Lectures.

The historical stories have been chosen from lists furnished by pupils.

TEXT-BOOKS.

Gardiner. *Student's History.* Longmans. 4/- a volume.
Vol. i., to 1509; vol. ii., 1509-1689; vol. iii., 1689-1885.

J. F. Bright. *History of England.* Longmans.
Vol. i., Mediæval Monarchy, 449-1485 (4/6); vol. ii., Personal Monarchy, 1485-1688 (5/-); vol. iii., Constitutional Monarchy, 1689-1837 (7/6).

Ransome. *An Advanced History of England.* Rivingtons. 7/6.

Acland and Ransome. *Outline of the Political History of England.* Longmans. 6/-.

D. Beale. *Text-book of English and General History.* Bell & Son. 2/6.

Taswell-Langmead. *Constitutional History.* Stevens & Haynes. 15/-.

D. Beale. *Student's Chronological Maps* (Charts). Bell & Son. 3/6.

Gardiner. *Student's Historical Atlas.* Longmans. 5/-.

F. W. Putzger. *Historischer Schul Atlas.* Bielefeld and Leipzig. Verlag von Velhagen und Klasing. 2 marks.

Period 1066-1272—

Stubbs. *Constitutional History.* Clarendon Press. 12/- each volume.
Vol. i., to 1215; vol. ii., 1215-1399.

J. R. Green. *History of the English People,* vol. i. Macmillan. 16/-.

— *The Making of England.* Macmillan. 16/-.

— *The Conquest of England.* Macmillan. 18/-.

Freeman. *History of the Norman Conquest.* Clarendon Press.

Lingard. *History of England,* vols. i. and ii. Duffy. Set of 10 vols. £1 10/-.

Kate Norgate. *England under the Angevin Kings.* 2 vols. Macmillan. £1 12/-.

Mrs. J. R. Green. *Henry II.* (Twelve English Statesmen). Macmillan. 2/6.

O. H. Richardson. *National Movement under Henry III.* Macmillan. 6/6 net.

Stubbs. *Early Plantagenets* (Epochs of Modern History). Longmans, 2/6.
Cox. *Crusades* (Epochs of Modern History). Longmans. 2/6.
Traill. *Social England*, vol. i. Cassell. 15/-.
Thorold Rogers. *History of Agriculture and Prices*, vols. i. and ii. Clarendon Press. £2 2/-.
Hunt. *English Church in the Middle Ages* (Epochs of Church History). Longmans. 2/6.
Stubbs. Introductions to (*a*) *Gesta Henrici II.: Benet of Peterbro;* (*b*) *Roger of Hoveden* (for foreign policy) (Rolls Series).
W. H. Hutton. *St. Thomas of Canterbury*. David Nutt. 1/-.
Misrule of Henry III. David Nutt. 1/-.
Simon de Montfort. David Nutt. 1/-.
In English History from Contemporary Writers Series.
De Joinville. *Saint Louis.* Chronicle (translated by James Hutton). Sampson Low. 2/6.

Period 1272-1399—

Stubbs. *Constitutional History*, vol. ii. Clarendon Press. 12/-.
Green. *History of the English People*, vol. i. Macmillan. 16/-.
Lingard. *History of England*, vols. ii. and iii. Duffy. 10 vols. £1 10/-.
Author of "The Greatest of the Plantagenets." *Life and Reign of Edward I.* Seeley. 6/-.
Tout. *Edward I.* (Twelve English Statesmen). Macmillan. 2/6.
Longman. *Life and Times of Edward III.* 2 vols. Longmans (*out of print*).
Traill. *Social England*, vol. ii. Cassell. 15/-.
Burton. *History of Scotland.* Blackwood. 8 vols. £1 8/-.
Oman. *Art of War* (Hundred Years' War). Methuen. £1 1/-.
Wakeman. *History of the Church of England.* Rivingtons. 7/6.
Stubbs. *Early Plantagenets* (Epochs of Modern History). Longmans. 2/6.
Poole. *Wycliffe and Movements for Reform* (Epochs of Church History). Longmans. 2/6.
Freeman. *Historical Essays.* 1st series, *Essay on Edward I.* Macmillan. 10/6.
Jusserand. *English Wayfaring Life in the Middle Ages.* Unwin. 7/6.
Ashley. *Economic History.* Longmans. Part i., 5/-; part ii., 10/6.
Shakspere. *Play of Richard II.*
Froissart. *Chronicles.*
Chaucer. *Canterbury Tales.*
Langland. *Piers Plowman.*

Period 1399-1485—

Stubbs. *Constitutional History*, vol. iii. Clarendon Press. 12/-.
Green. *History of the English People*, vols. i. and ii. Macmillan. 16/- each vol.
Lingard. *History of England*, vols. iii. and iv. Duffy & Sons. 10 vols. £1 10/-.
Ramsay. *Lancaster and York*. Clarendon Press. £1 17/6.
Wylie. *England under Henry IV*. Longmans. 4 vols. 10/6, 15/- (*out of print*), 15/-, £1 1/-.
Church. *Henry V*. (Men of Action Series). Macmillan. 2/6.
Gairdner. *Richard III*. Cambridge Press. 8/6.
Oman. *Warwick* (Men of Action Series). Macmillan. 2/6.
Stubbs. *Lectures on the Study of Mediæval and Modern History*. Clarendon Press. 8/6.
Seebohm. *Oxford Reformers*. Longmans. 14/-.
Traill. *Social England*, vol. ii. Cassell. 15/-.
Gairdner. *Lancaster and York* (Epochs). Longmans. 2/6.
Gairdner. *Paston Letters*. Constable. 3 vols. 16/- net.
Fortescue. *Governance of England* (edited Plummer). Clarendon Press. 12/6.
Shakspere. *Plays: Henry IV., Henry V., Henry VI.*

Tudor Period, 1485-1603—

York Powell and Tout. Text-book, *History of England* (Henry VIII. to Revolution of 1689). Longmans. 2/6.
Lingard. *History of England*, vols. iv., v., vi. Duffy & Sons. 10 vols. £1 10/-.
Green. *History of the English People*, vol. ii. Macmillan. 16/-.
Froude. *History of England from the Fall of Wolsey to the Armada*. Longmans. 12 vols. 3/6 each.
Hallam. *History of England* (Constitutional). Murray. 7/6.
Busch. *England under the Tudors*. Innes. 16/- net.
Gairdner. *Henry VII*. (Twelve English Statesmen). Macmillan. 2/6.
Bacon. *Henry VII*. (edited Lumby). Cambridge Press. 3/-.
Brewer. *Reign of Henry VIII*. Murray. 2 vols. 15/- each.
Beesly. *Elizabeth* (Twelve English Statesmen). Macmillan. 2/6.
Creighton. *Elizabeth*. Longmans. 5/- net.
— *Age of Elizabeth* (Epochs of Modern History). Longmans. 2/6.
— *Wolsey* (Twelve English Statesmen). Macmillan. 2/6.
Ranke. *History of England*. Clarendon Press. 6 vols. £3 3/-.

Traill. *Social England*, vols. ii. and iii. Cassell. 15/- each volume.
Stubbs. *Lectures on Mediæval and Modern History*. Clarendon Press. 8/6.
Macaulay. *Essays* (Burleigh). Longmans. 2/6.
Seeley. *Growth of British Policy*. Cambridge University Press. 2 vols. 12/-.
Seebohm. *Oxford Reformers*. Longmans. 14/-.
Wakeman. *History of the Church of England*. Rivingtons. 7/6.
Burnet. *History of the Reformation*. Clarendon Press. 7 vols. £1 10/-.
Aubrey Moore. *History of the Reformation*. Kegan Paul. 16/-.
Froude. *English Seamen in the Sixteenth Century*. Longmans. 3/6.
Hume. *Courtships of Queen Elizabeth*. Fisher Unwin. 12/-.
— *The Year after the Armada*. Fisher Unwin. 12/-.
— *Walter Raleigh*. Fisher Unwin. 5/-.
— *Philip II.* (Foreign Statesmen). Macmillan. 2/6.
Cunningham. *English Industry and Commerce*. Pitt Press. Vol. i., 13/4; vol. ii., 15/-.
H. Hall. *Society in the Elizabethan Age*. Sonnenschein. 10/6.
Berville. *The Story of the Chevalier Bayard* (Chronicle). Friswell. (Low.) 2/6.

Stuarts and Commonwealth, 1603-1660—

Cordery and Philpotts. *King and Commonwealth* (text-book). Seeley. 5/-.
Gardiner. *History of England*, 1603-1642. Longmans. 10 vols. 5/- net each.
— *History of the Great Civil War*, 1642-1649. Longmans. 4 vols. 5/- net each.
Lingard. *History of England*, vols. vii. and viii. Duffy & Sons. 10 vols. £1 10/-.
Green. *History of the English People*, vol. iii. Macmillan. 16/-.
Ranke. *History of England*, vols. i., ii., iii. Clarendon Press. 6 vols. £3 3/-.
Hallam. *Constitutional History*. Murray. 7/6.
Guizot. *History of the English Revolution*. Bohn. 3/6.
— *Life of Oliver Cromwell*. Macmillan. 6/-.
Frederic Harrison. *Cromwell* (Twelve English Statesmen). Macmillan. 2/6.
Traill. *Social England*, vol. iv. Cassell. 17/-.
Sanford. *Studies and Illustrations of the Great Rebellion*. John Parker (*out of print*).

Forster. *Sir John Eliot.* Longmans (*out of print*).
— *Grand Remonstrance.* Murray. 12/-.
Church. *Bacon* (English Men of Letters). Macmillan. 1/-.
Carlyle. *Cromwell's Letters and Speeches.* Chapman & Hall. 2/6.
W. H. Hutton. *William Laud* (Leaders of Religion Series). Methuen. 3/6.
Ottley. *Lancelot Andrewes* (Leaders of Religion Series). Methuen. 3/6.
Lady Verney. *Memoirs of the Verney Family.* Longmans. 4 vols., 84/-.

The Later Stuarts, 1660-1714—

Hale. *Fall of the Stuarts* (Epochs of Modern History). Longmans. 2/6.
Morris. *Age of Anne* (Epochs of Modern History). Longmans. 2/6.
Lingard. *History of England*, vols. ix., x. (ends 1689). Duffy. 10 vols. £1 10/-.
Ranke. *History of England*, vols. iii., iv., v. (use for foreign policy). Clarendon Press. £3 3/-.
Macaulay. *History of England.* Longmans. 5/-.
Hallam. *Constitutional History.* Murray. 7/6.
Lecky. *History of England in the 18th Century.* Longmans. 7 vols. 6/- each.
Green. *History of the English People*, vols. iii. and iv. Macmillan. 16/- a vol.
Traill. *William III.* (Twelve English Statesmen). Macmillan. 2/6.
Stanhope. *Reign of Queen Anne.* Murray. 16/-.
Wyon. *History of Great Britain during the Reign of Queen Anne.* Chapman & Hall (*out of print*). 2 vols. £1 12/-.
Leslie Stephen. *Swift* (Men of Letters Series). Macmillan. 1/-.
Swift. *Conduct of the Allies.* Various.
Hassall. *Bolingbroke* (Statesmen Series). W. H. Allen. 2/6.
Macaulay. *Essays* (Temple). Longmans. 2/6.
Evelyn. *Diary* (Chandos Classics). Warne. 1/6.
Traill. *Social England*, vol. iv. Cassell. 17/-.
Burnet. *History of His Own Times.* Clarendon Press. 9/6.
Anson. *Law and Custom of the Constitution.* Clarendon Press. Vol. i., 12/6; vol. ii., 14/-.

Hanoverian Period, 1714-1815—

Skottowe. *Our Hanoverian Kings.* Sampson Low. 3/6.
Lecky. *History of England in the 18th Century.* Longmans. 7 vols. 6/- each.

Stanhope. *History of England* (to 1783). Murray. 9 vols. 5/- each.
Green. *History of the English People*, vol. iv. Macmillan. 16/-.
Erskine May. *Constitutional History* (from George III.). Longmans. 3 vols. 18/-.
Hallam. *Constitutional History*. Murray. 7/6.
Ranke. *History of England*, vol. v. Clarendon Press. £3 3/-.
Seeley. *Expansion of England*. Macmillan. 4/6.
Traill. *Social England*, vol. v. Cassell. 17/-.
Morley. *Walpole* (Twelve English Statesmen). Macmillan. 2/6.
Macaulay. *Essays* (Clive. Hastings). Longmans. 2/6.
Morley. *Chatham* (Twelve English Statesmen). Macmillan. 2/6.
Not yet published.
Rosebery. *Pitt* (Twelve English Statesmen). Macmillan. 2/6.
Montagu Burrows. *British Foreign Policy*. Blackwood. 6/-.
Mahan. *Influence of Sea Power on History*. Sampson Low. 15/-.
Burke. *Thoughts on the Present Discontents*. Clarendon Press. 4/6.
— *Reflections on the French Revolution*. Clarendon Press. 5/-.
Also cheaper editions.
Carlyle. *French Revolution*. Chapman & Hall. 2 vols. 2/6 a vol.
Also cheaper issues.
Thos. Wright. *Caricature History of the Georges*. Chatto. 3/6.

LIST OF HISTORICAL NOVELS AND TALES AND POEMS

ILLUSTRATING THE PERIOD 1066 to 1815.

Period 1066-1272–

Kingsley. *Hereward the Wake* (Last Struggle of the English). Macmillan. 3/6.
Lytton. *Harold*. Routledge. 2/-.
M. M. Blake. *Siege of Norwich Castle* (Struggle of the English). Seeley. 5/-.
Henty. *Wulff the Saxon* (written for boys). Blackie. 6/-.
— *Winning his Spurs* (written for boys) (Crusades). S. Low. 2/6.
Macfarlane. *Camp of Refuge* (Hereward). Constable. 3/6.
Sir W. Scott. *Count Robert of Paris* (First Crusade). Black. 1/6.
— *The Betrothed* (Henry II.). Black. 1/6.
— *The Talisman* (Richard and Saladin). Black. 1/6.
— *Ivanhoe* (Richard Cœur de Lion). Black. 1/6.

C. M. Yonge. *The Constable's Tower* (King John). National Society. 3/-.
— *The Prince and the Page* (Edward I.). Macmillan. 2/6.
— *The Little Duke* (Richard the Fearless of Normandy). Macmillan. 2/6.

These are children's books.

G. P. R. James. *Philip Augustus* (Struggle with King John). Warne. -/6.
Tennyson. *Harold:* a drama.
— *Becket:* a drama.

Period 1272-1399—

Jane Porter. *The Scottish Chiefs* (1296-1314). Routledge. 2/-.
Grace Aguilar. *The Days of Bruce.* Nisbet. 2/-.
Mary Peard. *Prentice Hugh* (Edward I.). National Society. 3/6.
M. Everett Green. *The Lord of Dynevor* (Edward I. Wales). Nelson. 2/6.
Sir W. Scott. *Castle Dangerous* (1306). Black. 1/6.
Henty. *In Freedom's Cause* (William Wallace). Blackie. 6/-.
C. M. Yonge. *The Lances of Lynwood* (Black Prince in Spain). Macmillan. 2/6.
Henty. *St. George for England* (Crecy, Poitiers). Blackie. 5/-.
Conan Doyle. *The White Company* (Black Prince in France). Smith & Elder. 3/6.
E. Mitchell. *The Golden Horseshoes* (Chivalry. Edward III.). Masters. 5/.
Everett Green. *In the Days of Chivalry* (Black Prince). Nelson & Sons. 5/-.
Henty. *A March on London* (Wat Tyler). Blackie. 5/-.
— *The Lion of St. Mark* (Venice). Blackie. 6/-.
Lytton. *Rienzi* (Last Tribune, 1354). Routledge. 3/6.
Sir W. Scott. *Lord of the Isles* (Bruce).

Period 1399-1485—

James. *Agincourt* (1415). Warne. -/6.
Henty. *At Agincourt.* Blackie. 6/-.
Mark Twain. *Joan of Arc* (serious). Chatto & Windus. 6/-.
Author of "Schönberg Cotta Family". *Joan the Maid.* Nelson. 4/-.
Andrew Lang. *The Monk of Fife* (Joan of Arc). Longmans. 3/6.
Mrs. Oliphant. *Joan of Arc.* Putnam. 5/-.

Sir W. Scott. *The Fair Maid of Perth* (Murder of Rothsay). Black. 1/6.
C. M. Yonge. *The Caged Lion* (James I. of Scotland). Macmillan. 3/6.
Miss Wilbraham. *For and Against* (Wars of the Roses) (out of print).
C. M. Yonge. *Grisly Grisell* (Wars of the Roses). Macmillan. 3/6.
Lady G. Fullerton. *A Stormy Life* (Margaret of Anjou). Burns & Oates. 6/-.
C. M. Yonge. *Two Penniless Princesses.* Macmillan. 3/6.
Sir W. Scott. *Anne of Geierstein* (Margaret of Anjou). Black. 1/6.
Lytton. *Last of the Barons* (Warwick the King Maker). Various.
H. Ainsworth. *The Star Chamber* (Henry VII.). Various.
Author of "The Spanish Brothers". *Crushed yet Conquering* (John Huss). Religious Tract Society. 6/-.
Sir W. Scott. *Quentin Durward* (Louis XI. and the Scottish Guard). Black. 1/6.
G. P. R. James. *Mary of Burgundy* (1477). Warne. -/6.

Period 1485-1603—

Harrison Ainsworth. *The Star Chamber.* Routledge. 2/-.
Everett Green. *Evil May Day* (1517). Nelson. 2/6.
— *The Church and the King* (Dissolution of the Monasteries). Nelson. 5/-.
A. Manning. *The Household of Sir Thomas More* (Diary of Margaret Roper). Nimmo. 6/.
Harrison Ainsworth. *Windsor Castle* (Henry VIII.). Routledge. 2/-.
C. M. Yonge. *The Armourer's Prentices* (Divorce). Macmillan. 3/6.
Mark Twain. *The Prince and the Pauper* (Edward VI.). Chatto. 3/6.
Stanley Weyman. *Francis Cludde* (Mary Tudor). Cassell. 6/-.
Harrison Ainsworth. *Tower of London* (Lady J. Grey). Routledge. 2/-.
Kingsley. *Westward Ho!* (Elizabeth's Seadogs). Macmillan. 2/6.
Sir W. Scott. *The Monastery* (Murray's Regency). Black. 1/6.
— *The Abbot* (Loch Leven). Black. 1/6.
— *Kenilworth* (Amy Robsart). Black. 1/6.
Whyte Melville. *The Queen's Maries* (Mary of Scots). Longmans. 1/6.
Eliza Pollard. *A Gentleman of England* (Sir P. Sidney). 5/-.

C. M. Yonge. *Unknown to History* (Mary of Scots in Captivity). Macmillan. 3/6.
Everett Green. *Loyal Hearts and True* (Queen Elizabeth). Nelson. 5/-.
Henty. *Under Drake's Flag.* Blackie. 6/-.
— *St. Bartholomew's Eve.* Blackie. 6/-.
Robert Leighton. *Under the Foeman's Flag* (Armada). Melrose. 3/6.
Mrs. Marshall. *Penshurst Castle* (Sir P. Sidney). Seeley. 5/-.
Hon. E. Lawless. *With Essex in Ireland.* Smith, Elder. 6/-.
— *Maelcho* (Irish Rising of 1579). Smith, Elder. 6/-.
Kingsley. *Plays and Puritans* (Essays). Macmillan. 3/6.
Reed. *Sir Ludar* (Ireland. Queen Elizabeth). Sampson Low. 2/6.
Charles Reade. *The Cloister and the Hearth* (for Picture of Middle Ages. Erasmus). Chatto. 3/6.
Mrs. Charles. *The Schönberg Cotta Family* (Luther). Nelson. 3/6.
Author of "Mdlle. Mori". *In the Olden Time* (Peasant War in Germany, 1525). Longmans. 2/6.
C. M. Yonge. *The Dove in the Eagle's Nest* (Maximilian). Macmillan. 3/6.
G. Eliot. *Romola* (Savonarola). Blackwood. 3/6.
Yeats. *The Honour of Savelli* (Cæsar Borgia). Sampson Low. 2/6.
Grace Aguilar. *Vale of Cedars* (Ferdinand and Isabella). Various.
Gordon Stables. *Westward with Columbus.* Blackie. 5/.
Author of "Dark Year of Dundee". *The Spanish Brothers* (Persecutions). Nelson. 4/-.
Henty. *By Pike and Dyke* (Netherlands). Blackie. 6/-.
— *By England's Aid* (Netherlands). Blackie. 6/-.
Liefde. *The Beggars* (Netherlands). Hodder. 3/6.
Everett Green. *Shut In* (Siege of Antwerp, 1585). Nelson. 5/-.
Stanley Weyman. *The House of the Wolf* (St. Bartholomew). Longmans. 3/6.
C. M. Yonge. *The Chaplet of Pearls* (St. Bartholomew). Macmillan. 3/6.
Stanley Weyman. *A Gentleman of France* (Henry III. and the League). Longmans. 6/-.
James. *Henry of Guise* (the States of Blois. League Times). Routledge. 2/-.
Sir W. Scott. *Marmion* (a tale of Flodden Field).
— *The Lady of the Lake* (James V. and Douglas).
— *The Lay of the Last Minstrel* (1557).

Tennyson. *Columbus:* a poem.
— *Queen Mary:* a drama.
— *The Revenge:* a Ballad of the Fleet.

Period 1603-1660—

Sir Walter Scott. *The Fortunes of Nigel* (Court of James I.). Black. 1/6.
— *A Legend of Montrose* (Montrose and Argyle, 1645). Black. 1/6.
— *Woodstock* (Cavaliers and Roundheads). Black. 1/6.
Harrison Ainsworth. *Guy Fawkes.* Routledge. 2/-.
Shorthouse. *John Inglesant* (perfect Picture of Court of Charles I.). Macmillan. 3/6.
Whyte Melville. *Holmby House* (Cavaliers and Roundheads). Longmans. 1/6.
Edna Lyall. *To Right the Wrong* (Cavaliers and Roundheads). Hurst & Blackett. 3/6.
A. J. Church. *With the King at Oxford* (Charles I.). Seeley. 5/-.
Author of "The Schönberg Cotta Family". *The Draytons and the Davenants* (Civil Wars). Nelson & Sons. 3/6.
Wilkie Collins. *Hide and Seek* (Civil Wars). Chatto. 3/6.
George Macdonald. *St. George and St. Michael* (Civil Wars. Siege of Raglan Castle). Kegan Paul. 3/6.
Rev. A. D. Crake. *Fairleigh Hall* (Civil Wars). Mowbray. 2/6.
M. and E. Lee. *Rosamond Fane* (Escape of Duke of York). Griffith & Farran. 3/6.
Anna Glyn. *A Pearl of the Realm* (Civil Wars. Nonsuch Palace). Hutchinson. 6/-.
Emma Marshall. *A Haunt of Ancient Peace* (Little Gidding). Seeley. 5/-.
Edited by Canon Carter. *Nicholas Ferrar* (not a story; account of Little Gidding). Longmans. 6/-.
— *Brave Dame Mary* (Siege of Corfe Castle). S.P.C.K. 2/-.
C. M. Yonge. *Under the Storm* (Cavaliers and Roundheads). National Society. 3/6.
Miss Holt. *Ashcliffe Hall* (Cavaliers and Roundheads). 3/6.
Harrison Ainsworth. *Boscobel.* Routledge. 2/-.
Emma Marshall. *The White King's Daughter* (Charles I.). Seeley. 3/6.

Emma Marshall. *Under Salisbury's Spire* (George Herbert). Seeley. 5/-.
Marryat. *The Children of the New Forest* (Cavalier story for children). Routledge. 2/-.
Author of "The Schönberg Cotta Family". *On Both Sides of the Sea* (Commonwealth and Restoration). Nelson. 5/-.
D. G. McChesney. *Miriam Cromwell's Royalist.* Blackwood & Son. 6/-.
A. Manning. *Mary Powell* (Diary of Milton's Wife). Nimmo. 6/-.
Field. *Ethne* (Cromwell in Ireland). Wells, Gardner. 6/-.
Alfred de Vigny. *Cinq Mars* (in French. Richelieu). Calmann Levy. 2 vols. 8 francs.
G. P. R. James. *Richelieu.* Warne. -/6.
Stanley Weyman. *Under the Red Robe* (Richelieu). Methuen. 6/-.
— *My Lady Rotha* (Thirty Years' War). Ward & Lock. 6/-.
Henty. *The Lion of the North* (Gustavus Adolphus). Blackie. 6/-.
Sir W. Scott. *Rokeby* (Marston Moor).
Browning. *Strafford.*

Period 1660-1714—

Sir Walter Scott. *Old Mortality* (Lauderdale and Claverhouse). Black. 1/6.
— *Peveril of the Peak* (Popish Plot). Black. 1/6.
— *The Bride of Lammermoor* (1700). Black. 1/6.
— *The Black Dwarf* (Jacobites). Black. 1/6.
Austin Clare. *The Carved Cartoon* (Plague and Great Fire). S.P.C.K. 3/-.
Henty. *When London Burned* (Plague and Great Fire). Blackie. 5/-.
Harrison Ainsworth. *Old St. Paul's* (Plague and Great Fire). Routledge. 2/-.
A. Manning. *Cherry and Violet* (Plague and Great Fire). Nimmo. 6/-.
Anthony Hope. *Simon Dale* (Treaties of Dover). Methuen & Co. 6/-.
Edna Lyall. *In the Golden Days* (Algernon Sidney). Hurst & Blackett. 3/6.
Emma Marshall. *Winchester Meads* (Bishop Ken). Seeley. 5/-.
Conan Doyle. *Micah Clarke* (Monmouth's Rebellion). Longmans. 3/6.
M. and C. Lee. *The Oak Staircase* (Monmouth's Rebellion). Griffith & Farran. 3/6.

Blackmore. *Lorna Doone* (Monmouth's Rebellion). S. Low. 2/6.
Walter Besant. *For Faith and Freedom* (Monmouth's Rebellion). Chatto. 3/6.
Everett Green. *In Taunton Town* (Monmouth's Rebellion). Nelson. 5/-.
A. E. Mason. *The Courtship of Maurice Buckler* (1685). Macmillan. 6/-.
Mary Peard. *To Horse and Away* (Charles II.). National Society. 3/6.
Mary Rowsell. *Traitor or Patriot* (Rye House Plot). Blackie. 3/6.
Stanley Weyman. *Shrewsbury* (a Romance of the Reign of William III.). Longmans. 6/-.
Henty. *Orange and Green* (B. Boyne). Blackie. 5/-.
Emma Marshall. *Kensington Palace.* Seeley. 5/-.
Henty. *The Bravest of the Brave* (Peterbro in Spain). Blackie. 5/-.
M. Rowsell. *Thorndyke Manor* (Jacobite). Blackie. 3/6.
Conan Doyle. *The Refugees* (Revocation of the Edict of Nantes). Longmans. 3/6.
Thackeray. *Esmond* (Jacobites. Anne's Reign). Smith, Elder. 1/6.

Period 1714-1815—

Sir W. Scott. *Rob Roy* (Rising of 1715). Black. 1/6.
— *The Heart of Midlothian* (Porteous Riots). Black. 1/6.
— *Waverley* (Rising of 1745). Black. 1/6.
— *Guy Mannering* (1750). Black. 1/6.
— *Redgauntlet* (Jacobites, 1770). Black. 1/6.
— *The Antiquary* (1798). Black. 1/6.
Henty. *Bonny Prince Charlie.* Blackie. 6/-.
— *A Jacobite Exile* (in service of Charles XII. of Sweden). Blackie. 5/.
— *With Frederick the Great* (Seven Years' War). Blackie. 6/-.
— *Hold Fast for England* (Siege of Gibraltar). Blackie. 5/-.
— *With Clive in India.* Blackie. 6/-.
— *With Wolfe in Canada.* Blackie. 6/-.
— *In the Reign of Terror.* Blackie. 5/-.
— *True to the Old Flag* (War of American Independence). Blackie. 6/-.
— *One of the Twenty-eighth* (Waterloo). Blackie. 5/-.
— *With Moore at Corunna.* Blackie. 6/-.
— *Through Russian Snows.* Blackie. 5/-.
Walter Besant. *Dorothy Forster* (Rising of 1715). Chatto. 3/6.

Thackeray. *The Four Georges.* Smith, Elder. 1/6.
Andrew Lang. *Pickle the Spy* (Young Glengarry. Ellibank Plot). Longmans. (Out of print.)
Author of "Atelier du Lys". *Mistress Beatrice Cope* (Rising, 1745). Hurst & Blackett. 3/6.
Harrison Ainsworth. *Preston Fight.* Routledge. 2/-.
Thackeray. *The Virginians.* Smith & Elder. 3/-.
Author of "The Schönberg Cotta Family". *Diary of Mrs. Kitty Trevylyan* (Wesley). Nelson & Sons. 3/6.
— *Against the Stream* (End of 18th Century). S.P.C.K. 4/-.
Dickens. *Barnaby Rudge* (Gordon Riots). Chapman & Hall. 2/6.
Walter Besant. *The Chaplain of the Fleet* (Fleet Marriages). Chatto. 3/6.
Sarah Tytler. *The Huguenot Family* (Refugees in England). Chatto. 2/.
Fenimore Cooper. *The Last of the Mohicans* (English and Americans). Routledge. 2/-.
G. Parker. *The Trail of the Sword* (French in America). Methuen. 6/-.
Emma Marshall. *The Four Reigns* (George III. to Victoria). Seeley. 5/-.
— *In Colston's Days* (Old Bristol). Seeley. 5/-.
— *Under the Mendips* (Hannah More). Seeley. 5/-.
Dickens. *A Tale of Two Cities* (French Revolution). Chapman & Hall. 2/6.
Stanley Weyman. *The Red Cockade* (French Revolution). Longmans. 6/-.
Author of "Mdlle. Mori". *The Atelier du Lys* (French Revolution). Longmans. 2/6.
Harriet Martineau. *The Peasant and the Prince* (French Revolution). Routledge. 1/6.
M. E. Coleridge. *The King with Two Faces* (Gustavus III. of Sweden. French Revolution). Edward Arnold. 6/-.
Author of "Mdlle. Mori". *On the Edge of the Storm* (French Revolution). Warne. 3/6.
Felix Gras. *The Reds of the Midi* (French Revolution). Heinemann. 3/6.
Sarah Tytler. *Citoyenne Jacqueline* (French Revolution). Chatto. 2/-.
Whyte Melville. *Sister Louise* (French Revolution). Ward & Lock. 2/-.
C. J. A., author of "Good Fight of Faith". *In Palace and Faubourg* (French Revolution). Nelson. 5/-.

Author of "Atelier du Lys". *A Child of the Revolution.* Longmans. 2/6.

F. M. Peard. *Mother Molly* (Threatened Invasion of Napoleon). Bell. 5/-.

Conan Doyle. *Uncle Bernac* (Napoleon). Smith, Elder. 6/-.

— *Brigadier Gerard* (Napoleon). Newnes. 6/-.

Tolstoi. *War and Peace* (Napoleon's Russian Campaign, for teachers). W. Scott. 4 vols. 2/6 a vol.

THE TEACHING OF ANCIENT HISTORY.

By MARY HANBIDGE, M.A. (Lond.).

THE importance of history as a school subject has been fully discussed in an earlier section. General scope. But "history," as taught in schools, too often connotes merely English, or, at best, modern history. Hence the necessity of asserting separately the claim of ancient history, though in the very fact that it is not a separate subject, lies its importance.

The progressive development of the human race is a scientific axiom. If we ignore the continuity of history, we tend to base our teaching only on facts, rather than on the laws which form the bond of sequence between them. Thus the sense of historical proportion is never awakened; and the girl so trained may know in detail the history of England, and the history of the Israelites, but has little idea of their relation to the rest of the modern or ancient world. The child of to-day cannot attain to a true understanding of the history and culture of her own nation unless she has some ideas of the civilisation we inherit. The Renaissance is a fact which every text-book emphasises, and every schoolgirl knows; but what does she know of its spirit? How little can she realise the enthusiasm that stirred those "spacious times" if she is an utter stranger to the "glory that was Greece, and the greatness that was Rome"!

Again, in neglecting ancient history, we lose sight of the homogeneity of the human race, that oneness which Thucydides felt would make his history not merely a passing record, but a prophecy ἐς τὸ ἀεί. And in truth the ancient city states grappled with many of the social and political problems of to-day. They are set before us in miniature, we see them in their entirety, and their solution guides or warns us. The influence of capital in politics, the depopulation of country districts, the dangers of a foreign corn supply, the drifting of democracy to socialism, and the treatment of subject races, were questions of as vital importance for Greece and Rome as they are to-day. So true is Dr. Arnold's paradox that the ancient world is the most modern of all. Thus regarded, ancient history forms a valuable mental training for upper forms, a training which, in the case of girls, is especially useful, since women too often do not realise the modern problems in which they are unconscious factors. A further advantage is the accessibility of the original authorities, even to a school class. Here at least they are not dependent on retrospective theories, but can see how the history of the day impressed the men who made it—a result not so easily obtainable in other branches of history.

General suggestions.

To turn to the practical teaching of the subject. From the beginning, the child must be trained to realise that the history of the world is a whole. Throughout the school, ancient and mediæval history should be taught side by side with that of England and Palestine. English history may with advantage be taught in less detail, and time thus secured for the sister subject. In French and German

schools this system is definitely adopted; we append a German scheme. If possible, the subject should be in the hands of the same teacher, that the correlation of interest may be duly emphasised. In classes where reading lessons are given, poems, plays, etc., which bear upon the history, should be chosen, and may suggest subjects for composition. A geography lesson should precede the history course, and the importance of geography throughout cannot be overestimated.

Graduated scheme. Course A. Ages 9-10.

With young children history proper is an impossibility, but an interest in the life of the past may be awakened very early. The mental development of the child epitomises that of the race, and in the record of a nation mythology precedes history. In the lowest classes of the Cheltenham Ladies' College a course of stories from Greek mythology has met with marked success. Quite little children know Jason, with his one sandal, as well as they do Cinderella, and Athene is a familiar friend, whose picture they recognise. Cavillers may say that we are only teaching fairy tales, but the same children grown a little older see their Athene the central point of all the glories of Periclean Athens, and find themselves in a world they know.

Such a course will begin with a talk about the Greeks and their Gods, pass on to the heroes, and end with the "Tale of Troy Divine," the wanderings of Odysseus, and the story of Thebes; of course these will be stories pure and simple, not vehicles for any ætiological theory, and the success will depend entirely on the descriptive power of the teacher.

We are now on the threshold of history, and since

a child is naturally anthropomorphic, the personal element must be made the most prominent. This course will therefore consist of a series of biographies, but biographies introductory to history. The men therefore whom we choose must be men who make or mark a period, and their lives must be closely connected. For this Greek history offers greater facilities than Roman, where the personal element is weaker.

Course B. Ages 10-12.

The following series is suggested:—

1. *Lycurgus* (the dawn of history); revive knowledge of Atridæ; new Peloponnesus, *cf.* Heptarchy; Lycurgus and his laws; rise of Sparta. 2. *Solon*, lawgiver of Athens. 3. *Pisistratus*, the tyranny; rise of free Athens. 4. *Crœsus*, Cyrus, Cambyses; Asiatic Greece, connection with Bible history. 5. *Darius* and his wrath against Athens. 6. *Miltiades* and Marathon. 7. *Themistocles* and Salamis. 8. *Pausanias*, victor of Platæa; his insolence and fall. 9. *Cimon*, expulsion of Persians from Ægean. 10. *Pericles* and his Athens; Sparta's jealousy; the war. 11. *Brasidas* and *Demosthenes*. 12. *Nicias* and the Sicilian expedition. 13. *Lysander* and fall of Athens. 14. *Socrates* and degradation of Athens. 15. *Agesilaus* and the fall of Sparta. 16. *Conon* and the rebuilding of the walls. 17. *Epaminondas*, the humbling of Sparta. 18. *Philip of Macedon* and his plans. 19. *Demosthenes* and how he failed to stop them. 20. *Alexander*.

In these two courses no text-books need be used or notes taken, but the children should be required to tell the tale of the last lesson, either *viva voce* or in writing. The appended chart should be used through-

out this course, and will show the connection with Jewish history.

History of Rome to B.C. 31. We now come to history proper, necessarily in outline. This must not be mere chronology, but a series of connected pictures of events. Such dates as are given must be the dates of a century. We suggest that Rome should form the subject of this course, since in the story of the nations Rome follows Greece. Rome touches the world the children already know, as mistress of Britain, and heir of Alexander, while Pyrrhus and Philip V. of Macedon are connecting links with the Hellenistic age, as a rule a *terra incognita*. Antiochus and the Maccabees will connect it with Jewish history. For chart of connection with Course A see end. Course C.

Augustus to Charlemagne. The Germans recognise the importance of this period. In England, forming as it does the link between ancient and modern history, it is taught with neither, and yet it is the key to the race question of modern Europe. We suggest a scheme whose two connecting links are: the rise of Christianity and the barbarian migrations. 1. Augustus; Tiberius; Claudius. 2. Nero; the Christians. 3. Vespasian; Titus; fall of Jerusalem. 4. Roman life; Pompeii. 5. Britain and the expansion of the empire under Trajan. 6. Marcus Aurelius; Christianity and Paganism; death of Oracles. 7. Diocletian; last persecutions of Christians; barbarians; inroads. 8. Constantine, first Christian emperor; Constantinople. 9. Julian; reaction against Christianity; Franks; Strasburg (357). 10. Alaric and Visigoths (410). 11. Attila and Course D. Ages 13-14.

Huns (450). 12. Fall of empire. 13. Alexandria. 14. Theodoric and Ostrogothic kingdoms. 15. Clovis and Frankish kingdoms. 16. Descendants of Clovis; Brunhilda and Fredegond; extension of Frankish kingdom. 17. Monastic age, Celtic and Roman; Gregory the Great; rise of Papacy; Gregory and Brunhilda; Augustine. 18. Mahomet. 19. Caliphs; spread of Mahometanism in Asia, Africa, Spain. 20. Saracens repulsed (732); Charles Martel. 21. *Fainéant* kings; mayors of palace. 22. Charlemagne. 23. Holy Roman empire.

History for higher classes.

In the higher classes of a school we may assume a fair knowledge of outline history. Periods bearing on the classical reading should be selected and read in detail. Typical periods as "The Empire of Athens and the Age of Pericles," and "The Age of Augustus".

A standard history should be worked through, and other books, notably the original historians, will be suggested. A lending library is therefore essential. An essay subject will be set in connection with each lecture to form a centre for reading.

Illustrations.

Throughout, the importance of concrete illustrations cannot be too strongly insisted upon. In many places the lectures can be supplemented by visits to local museums, Roman relics, etc. (*e.g.*, Chedworth Villa near Cheltenham, Gloucester Museum, Bath). For elder classes a visit to the British Museum would obviously be helpful, but it is wonderfully easy to interest even quite young children. A board schoolboy of eleven, who was wandering aimlessly about the Elgin room, was delighted when I showed him the Nemesis head and told him the story

of the Persian Invincible Armada, which never set up its trophy.

Invaluable help can also be obtained from the Educational Museum of the Teachers' Guild. A full catalogue is published, in which we specially notice (1) illustrations of Greek dress, which might be copied by the mythology class (Course A); (2) maps and plans, especially of Athens and Rome (Holzel); (3) coins, museum reproductions; (4) portraits; (5) lantern slides. Mention may also be made of views of the English Photographic Co., Constitution Square, Athens, who send a priced catalogue; the series of card reliefs, 6d. each, by Lecherchier, Barbe et Cie., to be obtained from the Art Schools Association, 21 Queen's Square, Bayswater; card illustrations from Menge's *Antike Kunst.* These illustrations would be of double value were they the permanent possession of the class-room; the class could then become really familiar with each one. It would be a great boon if a central loan collection could be formed by some such body as the Teachers' Guild, from which illustrations of special periods could be borrowed term by term, a plan which at present is only adopted for lantern slides. This would give access to a greater selection of pictures and models than a single school can provide, and might lead to the development of the historical side of the school museum, and the consequent formation of a school archæological society.

Kiepert's wall-maps may be taken for granted. The list in the Teachers' Guild catalogue is helpful, but a teacher must make her own period maps. (White blind holland is an excellent material.)

Maps.

Books.

1. Text-books. (*a*) Roman. Creighton's *Primer;* E. S. Shuckburgh's *History of Rome for Beginners* and *History of Rome;* Well's *Short History of Rome* to the death of Augustus; How and Leigh's *History of Rome;* Mommsen's *History of Rome* (abridged for schools); Pelham's *Outlines of Roman History* (Epoch Series); Bury's *Student's Roman Empire.*

(*b*) Greek. Fyffe's *Primer;* Oman's *History of Greece;* Cox's *General History of Greece* (Epoch Series); Butcher's *Demosthenes.*

(*c*) Transition. Freeman's *Europe* (Primer); Freeman's *General Sketch of European History.*

2. Historical atlases. Student's Kiepert.

3. Suggestions for school library in connection with junior courses. Miss Gardner's *Friends of the Olden Time* and *Rome the Centre of the World;* Church's *Stories;* Cox's *Tales of Ancient Greece;* Kingsley's *Heroes and Poems;* Macaulay's *Lays;* Hawthorne's *Tanglewood Tales; Epics and Romances of the Middle Ages* (Wagner and Anson); Lang, Leaf and Myers' *Iliad;* Butcher and Lang's *Odyssey;* Worsley's *Odyssey;* Morris' *Earthly Paradise* and *Life and Death of Jason;* Browning's *Balaustion* and Aristophanes' *Apology;* Miss A. Swanwick's *Æschylus;* Tennyson's *Œnone,* etc.; Milton; *Atlas of Classical Portraits*—(*a*) Roman; (*b*) Greek (published by Dent); Baumeister's *Bilder aus dem Alterthum.*

German Scheme for History Teaching:—

1st year. Greek legends and German sagas.

2nd year. Pictures of ancient German and Prussian history, Cyrus to the Emperor Frederick.

3rd year. German and Prussian history, from invasion of barbarians to the Emperor Frederick.

4th year. Ancient history to invasions of barbarians (every fortnight, one hour's repetition of German and Prussian history).

5th year. German history, from invasion of barbarians to 1648.

6th year. From 1648 to the present day, with special stress on general history of civilisation.

PARALLEL CHART FOR THE YOUNGER CLASSES.

Year.	Biblical History.	Greece.	Rome.
1400			
1300	Exodus.	Troy ?	
1200			
	Samson.		
1100			
1000	David.		
900		Homer ?	
800		Lycurgus ?	
			Rome.
700			
600	Nebuchadnezzar.	Solon.	
	Belshazzar. Cyr	us. Pisistratus.	
500	Temple rebuilt. Dar	ius.	Expulsion of Kings.
	Esther. Xer	xes. Miltiades. Themistocles.	
		Pericles.	
400		Socrates.	The Gauls.
		Epaminondas.	
300		Alexander.	
		(Ptolemies.) (Pyrr	hus.)
			1st Punic War.
200	(Antio	chus.) (Philip of	Macedon. Hannibal.)
	(Maccabees.)	Poly	bius.
100			Corinth. Carthage.
		(Cleopatra.)	{Cicero. Pompey. {Julius Cæsar.
A.D.	Herod the Great. Birth of Christ.		Augustus.

At the beginning of Course B, Column I. (except the names in brackets) will be marked on the chart. Column II. as far as Alexander to be filled in during Course B. Column III. and the brackets of Columns I. and II. to be filled in during Course C.

TIME-MAPS.

By Dorothea Beale.

THE practice of representing to the eye by means of diagrams the facts of science, physical and social, is becoming more common: we have jagged lines indicating fluctuations in the winds or in the stocks. In an American record which has been sent to me, there are coloured squares representing the thousands of children who are regular in their attendance at school, black squares standing for the defaulting thousands. By such means we can see at a glance what the mind finds it difficult otherwise to realise; it furnishes a framework into which we can fit anything we wish to locate.

It is hardly necessary to say that for any orderly study of history it is necessary to have some scheme into which we may fit the subjects of study. As well might we expect by learning latitude and longitude to understand the position of places on the earth's surface, as by learning dates to get a clear idea of the relative position of events in time. We want some form of map which will represent the events to the eye. Many excellent charts have been drawn up giving us parallel histories, but the great difficulty is their prodigious size. Time is one-dimensional, and if we give a small linear space to a century, and try to represent a few thousand years, the

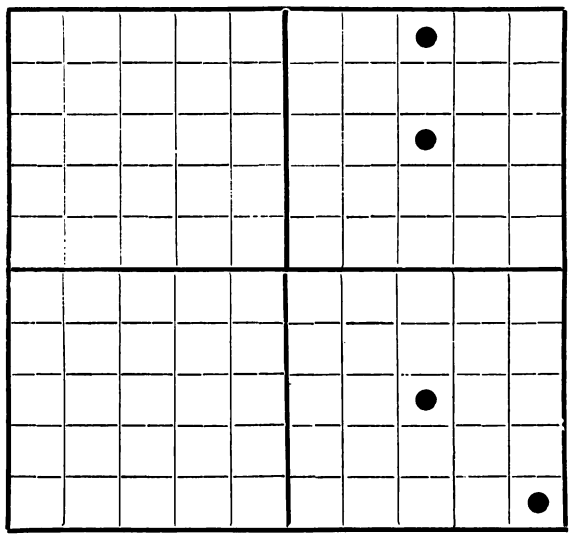
Historical Charts.

mind fails to grasp the picture; if the scale of the different periods varies, the proportion is wrong. For this reason rivers and trees of time, etc., have been more or less failures; they are useful and interesting, but the objection is, that they are either too large and detailed to be carried in the memory, or that the landmarks are too slight. The Méthode Mnémonique Polonaise, which is much used in France, was introduced to my notice, and first used by me at Queen's College: it has the great advantage of compactness—it is in form like a geographical map. It can be adapted to various purposes, but I shall dwell now on its applications as a record of time, and show the different ways in which it can be used by little children, though it is equally well adapted for Tom Brown at Oxford (who seems to have used it) and for the mature student of history. It may be made for little ones into a system of object-lessons, or hieroglyphics, if you will, which appeal to the child's imagination and help him to realise something of the proportion of things, and whilst looking at the world, as each of us must, from our own "pin-point," yet see life in relation to the lives of others. It is compact; it shows at a glance the relations of events. We can have a world-map and give only the great landmarks, or we may by a map of large proportions work out to any degree of detail a short period. The plan is to make a square of ten represent a century, and each horizontal line a decade. Thus:—

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99

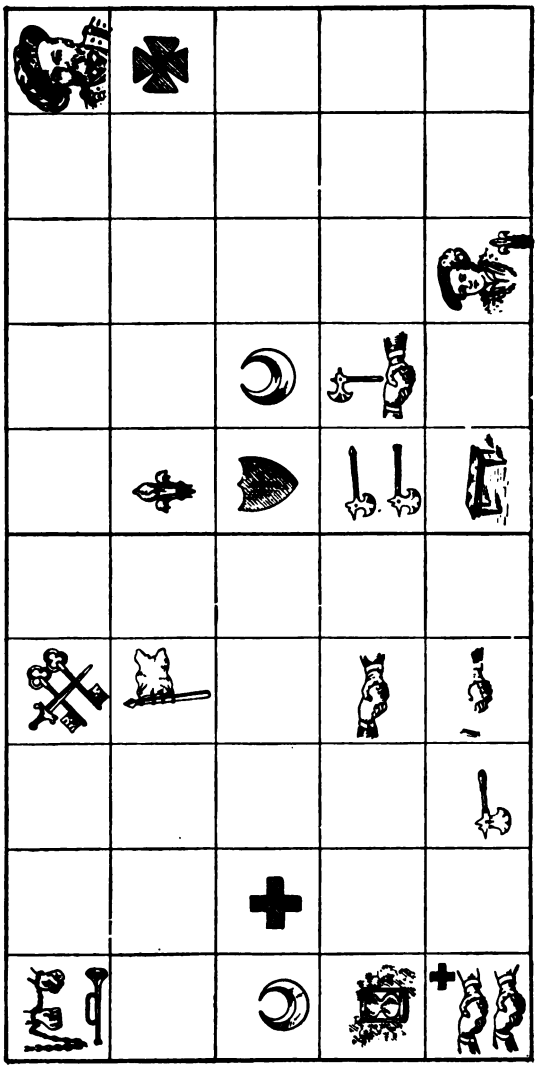
It will at once be seen that all the numbers in the first line of a century are units, in the second tens, in the third twenties, and so on; whilst, if we look down the vertical line, all the numbers in the first row end with nought, in the second with one, and so on. The thick line is intended to help the eye; we have forty and fifty on each side of the horizontal thick line, four and five on each side of the vertical. A few minutes' practice will generally enable the pupil to read off numbers rapidly from a blank square. He will then have to learn the position of the marks in any century, as he would learn the geography of a country, or the shape of a constellation. Take, for example, the English history of the fourteenth century. We mark Edward II., in 1307; Edward III., in 1327; Richard II., 1377; Henry IV., 1399. The dates need not be

learned ; we have the picture of the century in our mind and can read off the square.



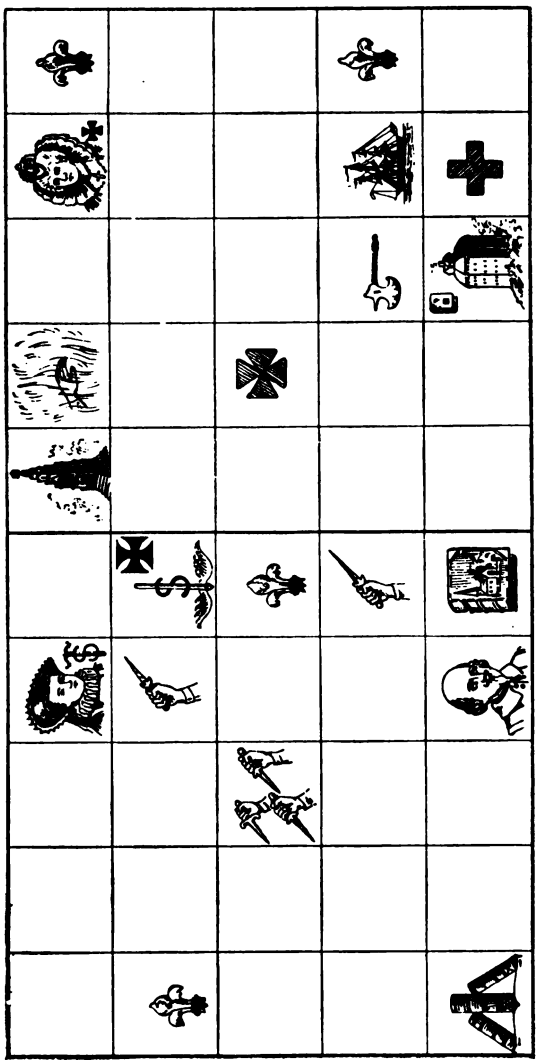
Some children take much pleasure in making and painting illustrated charts. I have one on a large scale of the sixteenth century, giving the accession of Queen Mary—1553, and a picture of the Tower, to which Northumberland and others were sent. A block in 1554 tells of the executions consequent on Wyatt's rebellion, and a dove with an olive branch of Philip's intercession for Elizabeth—1555 ; there is a picture of a martyr at the stake, and a hand in the flames for Cranmer—1557 ; a scroll stands for the first Covenant in Scotland, and a sword for the war with France—1558; there is a heart with Calais written on it.

Here is a specimen of a chart with a key of the



KEY TO SIXTEENTH CENTURY CHART.

1500. Columbus prisoner. Jubilee.	1501.	1502	1503. Julius II.	1504.	1505.	1506.	1507.	1508.	1509. Henry VIII.
1510.	1511.	1512.	1513. Flodden. Leo X.	1514.	1515. Francis I.	1516.	1517.	1518.	1519. Charles V.
1520. Soleyman.	1521. Diet of Worms.	1522.	1523.	1524.	1525. Prussia. Teutonic Order secularised.	1526. Baber.	1527.	1528.	1529.
1530. Death of Wolsey.	1531.	1532.	1533. Anne Boleyn.	1534.	1535. Fisher and More executed.	1536. Anne Boleyn beheaded. Jane Seymour.	1537.	1538.	1539.
1540. Jesuits. Anne of Cleves. Cath. Howard	1541.	1542. Cath. Howard beheaded.	1543. Catharine Parr.	1544.	1545. Council of Trent.	1546.	1547. Edward VI. Henry II.	1548.	1549.



KEY TO SIXTEENTH CENTURY CHART.

1550.	1551.	1552.	1553. Mary Spenser born.	1554.	1555. Persecutions.	1556. Cranmer.	1557.	1558. Elizabeth. Ferdinand I.	1559. Francis II.
1560 Charles IX.	1561.	1562.	1563. Guise assass.	1564. Max II. Shakspere born.	1565.	1566.	1567.	1568.	1569.
1570.	1571.	1572. Massacre of St. Bartholomew.	1573.	1574. Henry II.	1575.	1576. Rudolph II.	1577.	1578.	1579.
1580.	1581.	1582.	1583.	1584. Orange assass.	1585.	1586.	1587. Mary Queen of Scots beheaded.	1588. Armada.	1589. Henry IV.
1590. *Faerie Queene*, 3 books.	1591.	1592.	1593. Shakspere's Poems.	1594. Hooker's *Eccles. Polity*.	1595.	1596.	1597. Bacon's Essays. Shakspere's first Play.	1598. Edict of Nantes.	1599.

sixteenth century.[1] It will be seen from this how events in contemporary history can be introduced. Thus the first year, 1500, reminds us of the discovery of America, and of the great jubilee, the precursor of the Papal downfall; the *fleur de lys* standing for the French kings and the cross for the German Emperors, tell of the accession of Francis I. and Charles V. Portraits are given of English sovereigns. We have later the massacre of St. Bartholomew with daggers, a ship for the Armada, etc., etc.

In the charts I have published,[2] I have given only English kings; when these are fixed in the memory, events of general history can be gradually introduced, and paper ruled on any scale required.

If the chart is studied as a whole, either in reference

[1] It may be well to add that I am not ignorant of the discussions respecting the proper beginning of a century. Is the year 1800 the last year of the eighteenth or the first year of the nineteenth century? Our dates have been translated from the Latin ordinals, and we ought to say the eighteen-hundredth year, instead of the year eighteen-hundred. I have deliberately preferred to conform the chart to the vulgar tongue. If I did not, the numbers in the first line would contain nine units and one ten, instead of all units; the second line of tens would contain one twenty, and so on. If we are content to use the inaccurate language of daily life, bearing in mind that it requires correction, and making such corrections when we are engaged in important historical or astronomical calculations, we may well be content to do the same with the chart. I shall, therefore, consider the life of a century as that of a centenarian. We say of a child that he is in his 1st, 2nd, 3rd, etc., year, when he is 0, 1, 2, etc., years old; so, also, a person is in his 100th year when he is 99 years old; and he has lived a century at the close of this year, for the cardinal marks the number of completed years, the ordinal the number of the year in progress. So 1799 is regarded as the closing year of the last century, 1800, 1801, as the first and second of this. For a learned and elaborate discussion on the subject, and a list of authorities for the view adopted, see *An Examination of the Century Question*, George Bell, Fleet Street, 1850.

[2] *Students' Chronological Maps* (Bell & Sons, 3s. 6d.).

to English or modern history, it is convenient to divide it into four periods, of five hundred years each, corresponding to four lines in the chart, and to characterise each century. Then on a larger scale, for which we have sheets of paper ruled, we put in gradually certain landmarks, whilst giving lessons on modern history, such matters being written in as the teacher directs. The writer's text-book of English and general history, in which are given the sovereigns of the principal European countries, notable persons and events, etc., can be used for lessons in connection with the chart.[1]

I subjoin a syllabus of a course of lessons on modern history :—

1st Christianity	2nd Good Emperors	3rd Military Despotism	4th Constantine	5th Fall of Rome
6th Barbaric Wars	7th Mahomet	8th Charlemagne	9th Alfred	10th Feudalism
11th Hildebrand	12th Crusades	13th Schoolmen	14th Rise of Middle-class	15th Renaissance
16th Reformation	17th Religious Wars	18th Political Wars	19th Revolution	20th

I.—In the first century we see Rome at the height of prosperity, victorious on all sides. During the second,

[1] For more complete lists of sovereigns and a selection of the more important dates, Beale's *Student Text-book of English and Modern History* may be referred to, and *Students' Chronological Maps* (Bell & Sons

she maintains her position fairly under the good emperors. The third is a period of trouble and confusion, the empire is struggling for existence. In the fourth, the firm government of Constantine maintained, for a short time after his accession, comparative peace; but the removal of the seat of government, and the subsequent division of the empire, facilitated the barbaric triumphs of Radagaisus, Alaric, Attila and Genseric in the fifth; and before its close, the Western empire had fallen, and Theodoric the Ostrogoth was king of Italy. This line embraces in Britain the 400 years of the Roman occupation, and a small portion of the Anglo-Saxon period.

II.—In the second line we have the period of barbarian settlements—tribes are changing into nations. The Anglo-Saxon invasions, the unceasing contests amongst the numerous petty kings, have terminated, by the middle of the tenth century, in the union of the country under Athelstane, the first who can properly be called King of all England. In France we have the union of the Franks under Clovis, the constant civil wars, interminable divisions, and *fainéant* kings of the Merovingian period, the union of the country under Charlemagne, the renewed civil strife, subdivisions, and *fainéant* kings of the Carlovingian line, and the accession of the third, or Capetian Dynasty.

In Germany, too, order is being developed out of confusion, and, in the tenth century, the different nations have agreed to choose one king; barriers are opposed to further invasion from without, free cities are rising, feudalism is being rapidly developed, the spirit of chivalry is felt, and the idea of a united

Christendom, subject to the emperor as temporal, to the pope as spiritual head, may be traced most distinctly in the schemes of the Othos, and the attempt of Sylvester II. to rouse the European nations for a crusade.

In Italy, so long a battlefield, the great republics are rising, and the pope from time to time asserting his independence. In the East, in Africa, in Spain, the Mahometan kingdoms have been established. During so turbulent a period, we must expect to find many heroes, and from these we may select Mahomet, Charlemagne and Alfred, as the central figures of the seventh, eighth and ninth centuries.

III.—In the third line we have the formation of the states of modern Europe. The great nations of the West are no longer isolated units, for they have joined together in crusades against the East, they acknowledge one head in the popes. The popes, mighty in the person of Gregory VII. in the eleventh century, in Innocent III. in the thirteenth, have sunk to the lowest depths of ignominy in the person of Alexander VI. The Albigenses are almost exterminated in the thirteenth, but Wickliffe has preached in the fourteenth. Huss and Jerome of Prague have been martyred at Constance early in the fifteenth, but Luther has begun to study the Scriptures. The middle classes, too, have been growing in importance, citizens have triumphed over warriors. The power of a turbulent chivalry has been destroyed by civil wars, the people have risen to power. The invention of gunpowder has changed the aspect of war, and the introduction of printing brought about a vast change in education; great writers, as Chaucer and Dante, are beginning to produce their

works in the vulgar tongue. America has, at the close of the period, been just discovered.

IV.—In the last line we have a period marked first by struggles for religious, afterwards for political liberty, the long religious wars of the fifteenth and sixteenth centuries. The oppression of the aristocratic and papal powers during the preceding period led, in some instances, to the exaggeration of the monarchical authority, and to this are opposed the revolutions of the seventeenth, eighteenth and nineteenth centuries, which have in some instances produced a reaction in favour of despotism. The discovery of America has given an extraordinary impulse to naval enterprise, to colonisation and commerce; this, together with the diffusion of knowledge by printing, has greatly stimulated intellectual activity, and the mathematical and philosophical studies of the sixteenth century have prepared the way for the practical triumphs of our own day.

Only a few leading dates have been marked in the published charts, which are coloured for different periods, but these may be added to indefinitely—sometimes by writing in additional signs or words to mark contemporary sovereigns, etc., but it is better not to multiply these too much; for many things no signs need be used, as persons and things of minor importance will become associated in the memory with the more important. Or again, suppose a special subject is taken up, as English literature or the history of painting, the name of a leading author or painter can be written across that portion of the century in which his chief works appeared, and all who belong to his school of thought will be easily

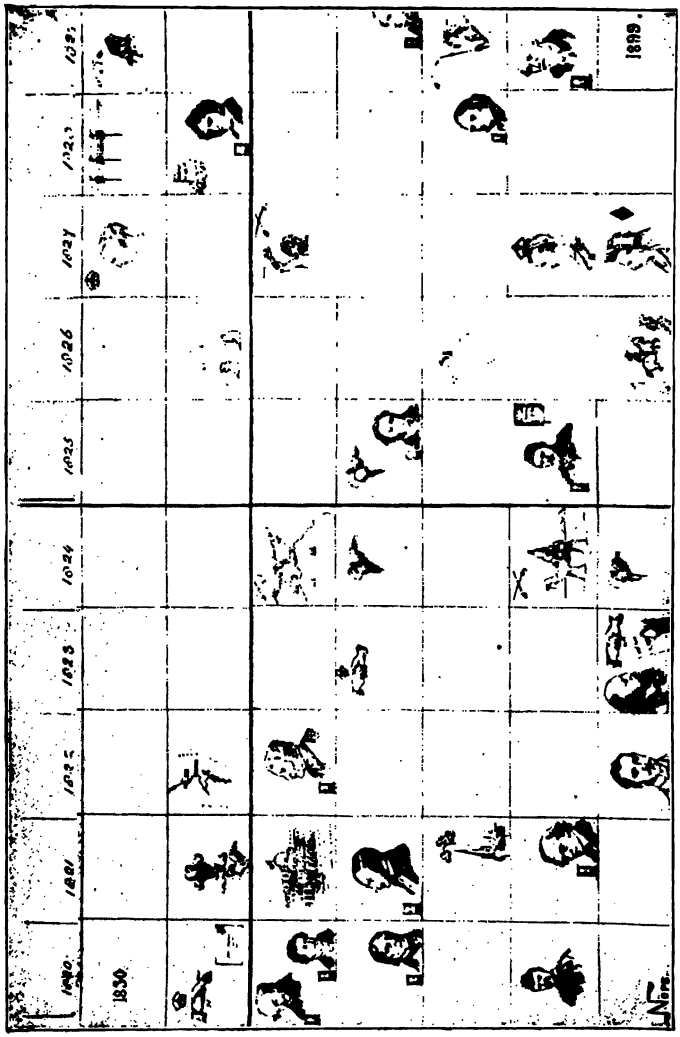
remembered in connection with him. A chart of English literature has been published on this plan by Baker, Clifton.

In the Chart of Ancient History, the numbers are read upwards and backwards. Thus :—

99	98	97	96	95	94	93	92	91	90
89	88	87	86	85	84	83	82	81	80
79	78	77	76	75	74	73	72	71	70
69	68	67	66	65	64	63	62	61	60
59	58	57	56	55	54	53	52	51	50
49	48	47	46	45	44	43	42	41	40
39	38	37	36	35	34	33	32	31	30
29	28	27	26	25	24	23	22	21	20
19	18	17	16	15	14	13	12	11	10
9	8	7	6	5	4	3	2	1	0

We give, in conclusion, photographs of two charts prepared for the Victorian Exhibition (1897) with a key.

The first gives the chief events of the Queen's reign, the second the chief scientific discoveries.


1820
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839

KEY TO CHART No. I.
CHART OF THE QUEEN'S REIGN.

1837. The Queen's Accession. 1838. First Electric Telegraph.

1840. Queen's Marriage—Penny Postage. 1841. Birth of Prince of Wales. 1842. Capture of Shanghai. 1846. Repeal of the Corn Laws. 1848. Death of Lord Melbourne—Chartist Revolt.

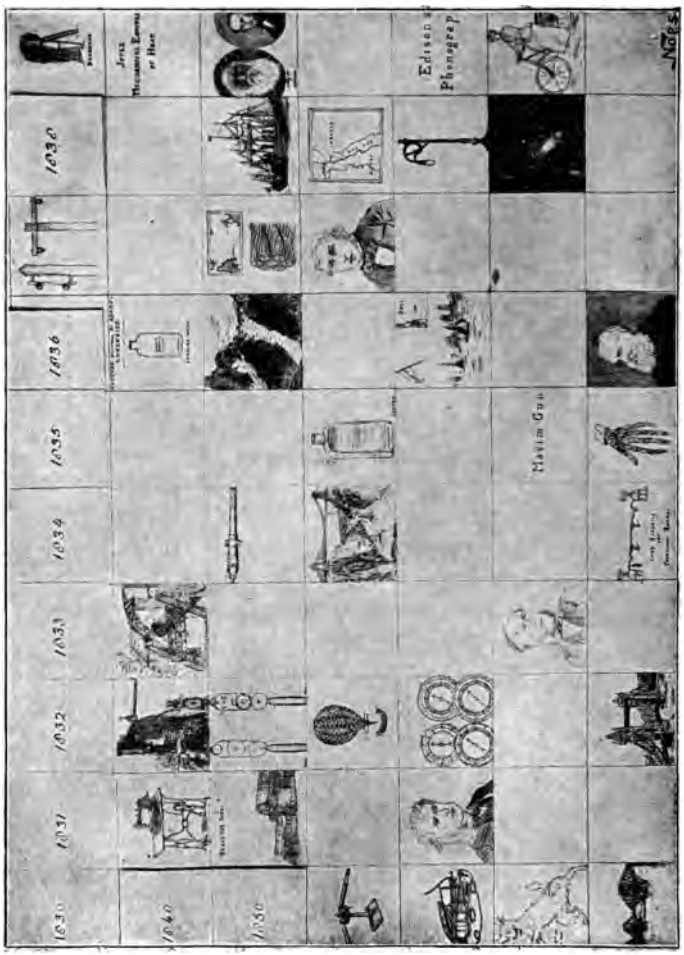
1850. Death of Wordsworth and Sir Robert Peel. 1851. First Great Exhibition. 1852. Death of the Duke of Wellington. 1854. Crimean War. 1857. Indian Mutiny.

1860. Death of Lord Aberdeen. 1861. Death of the Prince Consort. 1863. Prince of Wales' Marriage. 1864. Birth of the Duke of Clarence. 1865. Birth of the Duke of York—Death of Lord Palmerston. 1869. Death of Lord Derby.

1871. Disestablishment of the Irish Church. 1876. Queen Proclaimed Empress of India. 1878. Death of Lord John Russell. 1879. Zulu War.

1880. Lord Roberts' Relief of Candahar. 1881. Death of Lord Beaconsfield. 1884. Soudan War. 1885. Death of Gordon—Bible Revised. 1887. Queen's Jubilee. 1889. Death of Browning.

1892. Death of Duke of Clarence. 1893. Marriage of Duke of York—Death of Tennyson—Home Rule Bill Rejected. 1894. Birth of Prince Edward 1896. Jameson's Raid. 1897. Queen's Diamond Jubilee.


1830
1831
1832
1833
1834
1835
1836
1840
1850
Edison's Phonograph
Maxim Gun

KEY TO CHART No. II.
SHOWING PROGRESS IN SCIENCE DURING THE QUEEN'S REIGN.

1837. First Telegraph. 1839. Photography—Daguerre.

1841. Sewing Machine. 1842. Nasmyth's Steam Hammer. 1843. Ross' Telescope. 1848. Planet Neptune Discovered. 1849. Joule's *Mechanical Equivalent of Heat*—Anæsthetics.

1851. The Great Exhibition. 1852. Ophthalmoscope. 1854. Armstrong Gun. 1856. Tyndall's Investigation of Glaciers. 1857. Atlantic Cable from Valentia to Newfoundland. 1858. The *Great Eastern*. 1859. Darwin, *Origin of Species*—Brunel's Death.

1860. Stellar Spectroscopy—Huggins. 1861. Aeronautic Experiments. 1864. Clifton Suspension Bridge. 1865. Lister, Antiseptic Treatment. 1867. Death of Faraday. 1868. Suez Canal.

1870. Torpedo. 1871. Huxley, *Anatomy of Vertebrates*. 1872. Daily Weather Chart first begun. 1876. *Challenger* at Portsmouth—Bell's Telephone. 1878. Electric Light on the Embankment. 1879. Phonograph.

1880. Pasteur's Cure of Hydrophobia. 1882. Sir W. Siemen's Steel Process. 1885. Maxim Gun. 1888. Stellar Photography—Sir Isaac Roberts. 1889. Bicycles, The Pneumatic Tyre.

1890. Forth Bridge. 1892. Tower Bridge. 1894. Argon, by Lord Rayleigh and Professor Ramsay. 1895. Röntgen Rays. 1896, Lord Kelvin's Jubilee.

ECONOMICS FOR GIRLS.

By MARGARET BRIDGES.

NOTHING strikes a student of economics, more forcibly than the change which has come over public opinion with regard to this subject during the last few years. Until quite lately, it has been regarded, except by scholars, with suspicion and dislike, accused of setting forth material wealth as the supreme object of human desire, and of ignoring all that is generous and disinterested in human nature. To-day things are very different: indeed it might be said we are all economists now. Some vestige, however, of the old prejudice still lingers in the minds of those who ask: "What is the good of teaching economics to *Girls?*"

Changed attitude of public towards economics.

(1) The student of economics is trained to think exactly, to reason closely, and to express herself clearly. No one surely would maintain that such training is *less* needed by girls than by boys. On the contrary, we are often assured that women are less accurate than men, and are constitutionally illogical. In any science, vagueness of thought and looseness of expression are fatal to success, but the student of economics has a peculiar difficulty to overcome, for he finds no special vocabulary ready for his use. The terms used are for the most part those familiar in everyday language, em-

Training given in accuracy.

ployed however in a very definite and sometimes peculiar sense. Great care is needed in distinguishing between the ordinary and the economic meaning of such terms as utility, wealth, capital, value, and many others. And the training in scientific precision of language thus given is no small gain in these days of slip-shod English.

(2) The study of economics tends to stimulate independent thought, and to develop "mental muscle". We take it for granted that the questions set for home work require an application of the principles given, and not a mere reproduction of notes. The girls *must* think out the problems for themselves, for, as they truly remark sometimes: "We can't find the answers in our books". Political economy certainly does not lend itself to cribbing or cramming—and we are thankful that our text-books supply no ready-made solutions of problems.

Reasoning powers developed.

(3) We find that the study of the industrial conditions of our country gives an additional interest to history. To read it with economic eyes is to read it afresh, whilst to study it *without* them is to leave out a very important factor.

History rendered more interesting.

(4) I would urge the great importance of giving our girls, especially those engaged in philanthropic work, some knowledge of those economic principles upon which such work must be based to do real good. We have learnt that this is not easy, and that incalculable mischief may be done by thoughtless benevolence, which is too often cruelty in disguise. Mr. Loch, in speaking of charity organisation, has said: "It is likely

Interest shown by pupils in subject.

that we shall in the future draw our women secretaries from the ranks of those who have taken the trouble to study political economy". Of course, there must be the training of the heart as well as the head. Our theories, however perfect, will avail us little without the sympathetic insight that love alone can give, but perhaps women specially need to remember that sympathy itself must be guided by reason. Still it may be asked: "Can political economy, dealing as it does, for the most part, with dry abstractions, be made interesting to girls?" My experience is, that in no branch of their studies are the pupils more responsive or more ready to do their part of the work, and indeed to give often more than is actually demanded.

Diagrams supplied by pupils.

They particularly enjoy the making of original diagrams (very original sometimes!), and occasionally so elaborate as to cost the teacher some anxious study. Much amusement may be got out of such seemingly unpromising material as even the *Law of Diminishing Returns* or Ricardo's *Theory of Rent*, when they are touched upon by an imaginative or artistic girl. To past generations of pupils I owe many apt illustrations and ingenious diagrams, which have been stored up for future use, because they were much better than any I had thought of myself. I think our lessons fail sometimes, because we work so hard ourselves, that we leave our pupils nothing to do! Now in economics we are dealing to a great extent with facts that are already familiar to them, so that we can constantly appeal to their own experience and observation, and the teacher will find that "interrogative lessons on the Socratic model" are particularly suited to this

subject. The daily newspapers will furnish her with plenty of illustrations, and economic laws can be shown to be working themselves out before our eyes. What better comment on the Laws of Demand and Supply could we wish for than that supplied by the recent "boom" and subsequent "slump" in the bicycle trade, or the speculation in seats during the late Jubilee! The illustrations furnished by the girls themselves, from their own experience, are specially valuable. The daughters of Indian officers can testify to the diminished purchasing power of the "vanishing rupee," whilst Irish girls are eloquent on the system of Land Tenure in their own country; a banker's daughter will supply us with skilfully forged bank notes and bills of exchange, and on one occasion an Austrian pupil gave us some interesting information on the working of the Metayer system abroad.

Illustrations drawn from daily life.

In teaching younger girls—say from fifteen to seventeen—a sparing use should be made of text-books for home reading: paragraphs, exemplifying or enlarging on the lesson given, may be selected, but indiscriminate reading, for the average girl, at that age, is pretty sure to result—as she will candidly tell you—in her getting "hopelessly muddled". Jevons' *Primer of Political Economy* is an admirable introduction to the subject, but avowedly does not cover the whole ground, and I regret to say that Professor Gonner's very helpful text-book is now out of print. To a great extent indeed the teacher will find it necessary to form her own text-book, that is, to collect her materials from many sources, and adapt them to the use of her pupils. One feels in

Judicious use of text-books.

this, as in other subjects, that one cannot hope to do much more, in the limited time at our disposal, than awaken interest, and show what a wide field there is to be explored. We are glad to know that the subject is often continued after school days are over. Many of our pupils are preparing for the Senior Oxford Examination, but economic lessons are given in non-examination classes as well.

Economics as an examination subject.

Some take up the subject again later for the Cambridge Higher Local, and have to make themselves acquainted with Adam Smith, J. S. Mill, and a host of more modern writers, hardly any of whom could have been placed in their hands with advantage at an earlier age, although they will unconsciously have imbibed much of their teaching and will find that their year's training in elementary economics will have helped them a long way on their road.

In conclusion, we would advocate the study of economics for girls, because we believe that it helps them to live in a larger world, and to take a more intelligent interest in the lives of those around them.

Ethical considerations. Enlarged sympathies.

The "sordid science" is lifted into a higher plane when we regard it as "a part of the study of man"—and look on wealth as a means to an end, not an end in itself—valuable only so far as it facilitates a "growth towards that higher and purer condition of society, for which alone we care to strive".

Wealth an element in well-being.

APPENDIX.

I give a few extracts from papers received from old pupils, in answer to the request that they would say, quite simply and unofficially, what benefits they had derived from a course of economic study.

"I think that learning economics has helped me to take a more intelligent interest in everyday matters."

"I consider I have benefited more by that subject than by any other. There are so many subjects you can take an interest in *if* you understand economics, that if you do not, would appeal to you in no way whatever."

"It helps us to understand some of the most important subjects of the day, and gives us a clearer idea of the difficulties of the poor—and shows us the best way of helping them."

"The human sympathies cannot fail to be awakened, and narrow-minded and selfish views cannot long be entertained. Economics often shows the best methods in the relief of our less fortunate brothers and sisters."

"Living as I do, in Ireland, the study of this subject has widened my interests greatly. Now I can more fully understand the problem of landlord and tenant."

"Besides economics being useful, it is also very interesting."

"It tends to make one speak more exactly and to keep to the point."

Many more answers to the same effect might be given, but these are perhaps enough to show that the study of economics is neither uninteresting nor unpractical.

ENGLISH LITERATURE.

By Amy Lumby.

"ALL spirits upon which poetry falls," says Shelley, "open themselves to receive the wisdom which is mingled with its delight." To remember these words will help the teacher of literature to bear in mind her double aim—to inspire delight and at the same time to impart wisdom. It is impossible to lay down rules for accomplishing this aim, but we may trace out a few principles by which to guide our course. Literature appeals to the imagination, the faculty of the mind in which emotion and intellect join, and a literature lesson should combine the two elements of feeling and thought. Poetry needs to be enjoyed if it is to be understood, for it is the expression, not of facts which can be demonstrated, but of truth which can only be recognised by those who care for it. So the first aim of the teacher must be to make her class enjoy what they read. Dulness is a bad fault in any teacher; in the teacher of literature it is high treason. No one ought to teach the subject unless she thoroughly enjoys it herself and can communicate her enjoyment. But in trying to inspire delight in her pupils, she must be on her guard against the mental indolence of children who ask only to be amused. In this age of trivial literature and comic papers young people are apt to

The general aim and method of the teacher.

be impatient of serious reading, to find the *Faerie Queene* dull and the *Pilgrim's Progress* slow, but the teacher must persevere in presenting to them as attractively as may be the very best they are capable of relishing at all, and after a while a better taste will destroy all desire for the worthless rubbish they once found pleasure in.

When once the teacher has roused real enjoyment in her class, her part becomes merely that of the interpreter. She must see to it that her pupils understand the words they read, realise the images that are called up before them, and follow as closely as they can the thoughts that are presented to them. The subject does the rest. For the power of intercourse with great and good thoughts is such that it enlarges and lifts the mind insensibly to better things. If the spirit is but rendered sensitive to poetry, wisdom enters hand in hand with delight. We can give no rules for producing this effect. The power to do it is the special gift required in the teacher of literature. She must possess the faculty of kindling and stirring thought and feeling to respond to the thought and feeling presented to them. Without this she will never make her pupils feel anything of what poetry can teach. In no subject does the mental attitude and the mental furniture of the teacher matter so much.

Assuming then a thorough enjoyment and appreciation of the subject, we will consider a little more in detail the method in which it may be treated in one or two typical cases. To begin with the simplest form of literature—the reading lesson—we will suppose that we have to read

The earliest stage—the reading lesson.

a poem, say "The Wreck of the *Hesperus*," with a class of young children. We shall have in our own minds a clear conception of the qualities which make this one of the finest of modern ballads—the extreme simplicity of the theme, the vigour and breadth of the treatment, the pathos of the little human tragedy set against the great background of Nature in storm and tumult. But we shall not burden the children's minds with this information; with a very few words of preface to prepare them for what they are to expect, we shall first read the whole poem through to them. The reading is a very important point, for on this depends to a large extent the enjoyment they will have in the poem. A harsh voice or a dull delivery is fatal to pleasure; and monotonous reading fails to convey the point of the story, and to suggest the atmosphere of the poem. Every teacher of literature should be a trained reader.

The poem must next be taken verse by verse; the meaning of difficult or unusual expressions, such as "veering flaw," "lashed to the helm," "she stove and sank," should be explained, while those that are peculiarly apt should be noted with appreciation; for instance, "*fairy* flax," "a *whooping* billow," the vessel "*swept*" towards the reef, and many others. At the same time the class must be made to see the pictures suggested, as they rise: the wintry sea, the skipper beside the helm, the child lashed to the mast, the frozen ship rushing headlong to her doom. And lastly, the whole drift and significance of the poem must be kept before their minds by making them realise the situation; the happy child so suddenly overwhelmed, helpless and at first bewildered, then

as calamities thicken, turning for help to prayer; hurried on with the doomed vessel through night and storm, and sharing its fate among the exultant breakers. And they should feel the calm of the close and the survival of the human interest beyond the short-lived triumph of the sea. Of course it will not be possible at first to make young children feel all the force of a poem like this, but our aim must be to rouse their imaginations by bringing the picture it presents vividly before them, so that they gradually become more and more sensitive to the stimulus of poetry.

A course of reading lessons, graduated in difficulty from the simple ballad to such poems as "The Forsaken Merman," "Tithonus," and the "Ode to Duty," will lead up to the next stage, the reading of a play of Shakspere. Here we must cling very closely to our principle of the importance of enjoyment. Very few people who have read their first play at school are happy enough to have enjoyed it. And why is this? Because a mistaken ideal has been before the teacher's mind, and a mistaken method has been used to attain it. Careful study and exact understanding of the language of Shakspere is almost a liberal education in itself; but it is not always borne in mind that the understanding of the language is but a means to an end, and that notes, whether philological or historical, are of value only when they really throw light on the meaning of the text. It is worse than useless to burden the memories of children with derivations of words from languages with which they are absolutely unacquainted. When the original or root-meaning of a word is really worth knowing, and

The second stage—the detailed study of one of Shakspere's plays, or some other work in detail.

a knowledge of it tends to a more accurate use of the word, then it should be learnt, but to make children learn Saxon or Welsh or Sanskrit words simply because an English word is akin to them is a waste of time and power, and this explaining of the vaguely understood by the totally unknown is a subversion of all educational methods. The teacher should exercise a wise discretion in the use of notes, and not disgust her class with Shakspere altogether, as is too often done, by forcing upon the children a mass of dry information which overloads their memories without bringing a ray of illumination with it.

Some care will be needed with young children reading their first play to see that they can really follow the story of it. The dramatic form is puzzling to them ; the absence of descriptive matter, together with the constant change of scene, is apt to bewilder them, and it may be necessary to read the story to them in Lamb's *Tales from Shakspere*, or some such form, before we launch into the play itself. With older pupils this will not be required. With them the kind of preparation we should give would be rather a very simple talk about those moral laws of which Shakspere is the inspired teacher. Children of sixteen years of age, or thereabouts, are easily interested in problems of character, and it is well to explain to them something of what we understand by character and how it may be built up or undermined, rousing their consciousness to realise what their own moral experience has been, so that they look into themselves for confirmation of the facts with which the plays deal. Having done this, however, we must avoid tacking any specific "moral" to a play. Shakspere teaches, like

life, by indirection, and we have to consider his plays as pictures of life, not as tracts against particular vices.

In bringing before a class the characters of a play, we should first form a clear conception of them ourselves. Shakspere's people are so complex that many different views can be taken of them, and no thoughtful estimate is without its value. But it is most important that no statement about a character should be unsupported by evidence from the text. Adherence to this rule will save the teacher from making fancy sketches of her own, and will also make her shun those little text-books which give catalogues of qualities attached to each name, bringing no image whatever before the mind, and destroying all true realisation of the character. We should not be satisfied until we have made the chief characters in the play we are reading so real to our children that they would recognise them if they met them in the street.

When we have clearly realised the characters we shall be able to see the drift and the force of the play, and to show our children how the persons develop and change under the stress of circumstances and according to the absolute decrees of the moral law. To convey this teaching, all steeped in poetry of the richest kind, should be the purpose of a Shakspere lesson; and the notes that are learnt should be subordinate to that end. Our work must not be less thorough than it usually is at present, but it may well be less pedantic.

The reading of a play usually takes up a course of lessons, so that it is impossible in this space to give notes on any particular one, but the same principles which guided us in our treatment of a simple ballad

will hold good here, and in the study of such longer poems as may be chosen for the reading of our class. Here as there we must first secure clear understanding of the language, then we must realise the images called up by it, and lastly yield ourselves in intelligent self-surrender to the poet's thought, not obtruding our own personality but letting him lead us where he will, feeling ourselves, and teaching our class to feel, a deep reverence for what he has to say to us.

The reading of prose may be treated in much the same way, bearing in mind the fact that the emotional element is less marked in prose, the appeal being rather to reason than to feeling. Such prose as has become a part of literature is, however, largely imaginative, and we have to teach the children not only to follow closely a train of reasoning and to criticise it, if need be, but also to appreciate the means by which the writer makes his thought vivid to us, what figures he uses, what light he flashes upon his subject. Some of Macaulay's *Essays*, Addison's *Essays*, *Rasselas*, and similar works may well be read at this stage for the sake of the training they give in the right use of language, the first element of literary cultivation.

The most advanced stage—the study of the history of literature.

The teaching of a period of the history of literature is a matter on which only broad general principles can be laid down. Children of fourteen to sixteen can hardly be expected to realise clearly differences in style or treatment, or to be able to write criticisms on the poets of the period. With them, it will be best to make them acquainted with the lives of the chief writers, as far as may be necessary, and then to let them read as much as they can of their works. We

can teach them to love choice expressions, to recognise beauty of thought, to appreciate true imagination. They may not be able to say why they like these things, but they need not like them the less for that. With older pupils, capable of taking in general ideas as to the drift of thought in any particular age, the period to be studied should be set against its historic background, the first lessons being devoted to discussion of the stage of cultivation reached at the time, and the influences which had tended to produce it. For instance, a course on the Elizabethan period would require introductory lessons on the Renaissance as it affected England, on the Reformation in its bearing on education and freedom of thought, on the discovery of America and the spirit of adventure connected with it, and on the social and political conditions of the times. With clear conceptions on these points to start from, it will be easy to follow the art movement in poetry during the period, the growth of the drama, the development of prose writing in its various branches, and the students will be in possession of information which will help them to understand why Spenser, Shakspere, Bacon and our Authorised Version belong to that age and to no other. Then the chief authors should be read as far as possible at first hand, and the very cheap editions which are published of all our classics make it easy for the class to come provided with their own books. It will not be possible to read many of the longer works through with the class, but selection can be made of the choicest passages, and these can be linked together by a short analysis of the rest.

During this stage the sense of style should be carefully cultivated. Differences in style may be shown

by comparing examples of the treatment of similar themes by different writers; for instance, in poetry, "Lycidas," Gray's "Elegy," Adonais, and Thyrsis, might be studied with this aim, while in prose, selected essays of Bacon, Cowley, Addison and Lamb might be used in the same way. Taste must also be trained, and it should be made as catholic as possible; each author should be enjoyed for his own special excellence, Dryden for his vigour and common-sense, no less than Sir Thomas Browne for his "moth-like flitting" in intellectual twilight.

A suggestion for reading-courses adapted for girls of different ages is subjoined. It is not, and could not be, in any sense complete, but it may serve to help those who have not yet had much experience to estimate the character and scope of the reading that may be expected from children of various ages. Except in the case of the youngest children, the choice of books has been made so as to include prose and poetry of different epochs, and thus make the intellectual outlook wider than it could be if the reading were restricted to the works of one particular age. A girl who had read through the books mentioned in this course, or any drawn up on similar lines, would have a fair all-round acquaintance with the best kind of literature by the time she was eighteen.

Age.		
10—12.	*1st year.*	Macaulay's "Lays"; "Marmion"; Kingsley's "Heroes"; Keary's "Heroes of Asgard".
	2nd year.	"Evangeline" and "Hiawatha"; "Enoch Arden"; "Ancient Mariner"; Lamb's "Tales from Shakspere"; "Ivanhoe".
12—14.	*1st year.*	"Midsummer Night's Dream"; "Lady of the Lake"; "Deserted Village"; "Gulliver's Travels"; "Kenilworth".

Age.		
	2nd year.	"Merchant of Venice"; "Childe Harold"; "Morte d'Arthur"; "Vicar of Wakefield"; Essays from the "Spectator".
14—16.	*1st year.*	"As You Like It"; "Henry V."; Gray's "Elegy"; "The Princess"; "Esmond"; some of the "Essays of Elia".
	2nd year.	"Faerie Queene," book i.; "Julius Cæsar"; Milton's "Minor Poems"; Macaulay's Essays on "Clive" and on "Mme. d'Arblay"; Ruskin's "Sesame and Lilies".
16—18.	*1st year.*	"Macbeth"; "Paradise Lost," books i. and ii.; "The Holy Grail"; "Areopagitica"; Burke's "Speeches on America".
	2nd year.	"Hamlet"; "Essay on Man"; "Selections from Wordsworth"; Bacon's "Essays"; "Rasselas"; "Carlyle, the Hero as Poet and the Hero as Man of Letters".

PHILOSOPHY AND RELIGION.

By Dorothea Beale.

THE third division of Part I. has to do with man as subject, a person, self-conscious, related to other persons and to One All-embracing Personality in whom all live and move and have their being. I am to treat the subject from an intellectual point of view—religion, ethics, philosophy.

Sphere of school instruction.

No school, and especially no day-school for girls, is responsible for the whole of the religious education. The school is the link between infancy and mature life, between the home and the world, the secular and the spiritual. The school has to systematise instruction, and bring it to bear on the daily tasks; on the social life, on the developing character; to make the secular and religious life one organic whole.

We have to teach our pupils, so that they may *know* the truth, *feel* nobly, and hence *act* rightly. We have to cultivate the power of thought by instruction, to purify the emotions by the teachings of history and poetry including the Bible and the utterances of heroic and saintly lives, to strengthen the character by the discipline of the mind, heart, will.

Relation of dogmatics to ethics.

Emotion and action must be the expression of an intelligent belief. "He that cometh to God must believe that He is, and that He is a rewarder of them that seek Him." We

ought to offer the noblest gifts we can—a "reasonable service," a devotion of heart, which rests upon the truest conception we can form; in the highest of all subjects there should be that clearness of apprehension, that strong conviction, which is necessary, if any truth is to become a practical power. We are so made that we must, if we think at all, theorise, and our acts will depend on our theories; no student of history can doubt this. Our sanitarians have found that we may teach the poor about the value of cleanliness and fresh air, but not until they understand the breathing functions do they act upon it.

So in deeper things, it is ideas that govern the world. When the Apostle would teach the most practical truths of family life and social virtue, he began with the great doctrines of the indwelling Divine life, of our brotherhood in Christ, of our citizenship in a spiritual Kingdom, extending far beyond the regions of sense. We must found Christian teaching upon definite beliefs accepted and felt to be true by the highest reason. We must not be satisfied with cultivating the affections only. There must be something more than an "enthusiasm of humanity," something which can embrace and fulfil it, else it will blaze up like a bonfire, but soon die down, smothered under the ashes of pessimism. None of our faculties can be isolated from the others; each acts and reacts on each, the thought stimulating emotion, emotions quickening thought, and the life acting and reacting upon both. Ethics springs from dogmatics.

What do we mean by religion? Our age has been fertile in definitions. May we not say it is the power by which we enter into conscious *personal* relation with the One, the Eternal, the Father of all?

Religion as related to science and philosophy.

Though it may be truly said that all knowledge of Nature is knowledge of God, we feel that there is a difference between the teaching of science and the teaching of religion—a distinction between the knowledge of a thing, of an act, which we may know objectively, and the knowledge of a person whom we know subjectively. We might know all the movements of a machine, but we never speak of knowing a machine. It is possible to know the works of God, and not know Him. It is personal sympathetic knowledge which is the chief factor in the education of character—the humanities are educative in a different sense from mathematics and natural science. It is this personal relation to God with which religious teaching has to do; its true end is to draw us into sympathy with the All-Good.

Two things I would here insist on which are sometimes overlooked. 1st. The child knows persons before things, and in the earliest exercises of will-power, it is the will of another that rules his will. 2nd. Through obedience to the higher intelligence, and trust in the love of another, the child is enabled to acquire right habits.

Frobël's religious teaching is very beautiful, but he brings out less clearly than Rosmini the priority of the personal; if Nature speaks to a child of the All-Father, it is because he knows that all has to come to him through persons, it is only much later that forces can be hypostatised, and power, justice, spoken of apart from a person; though this is, as Lotze has specially insisted, as inconceivable as is quality without substance —attribute without subject.

First in the old sense of the word the child "worships" his parents and those to whom he looks up, he is miserable when he feels the displeasure of those with whom he is in sympathy, and their approbation is the sunshine of his soul; thus is he early led to think of the Father, to whom he and his parents owe all things, to whom they speak in prayer and whose unseen presence they feel.

Piety in its double sense.

Hymns then and prayers, which express the feelings of a child to a father, or the love to Jesus, and the desire to be like Him, are suitable; such as give rather the consciousness of a penitent reprobate, are sometimes heard at children's missions, to the great sorrow of those who know how dangerous it is to play with the emotions and to excite terrors.

We must consider first that the conscious life is only gradually developed; perceptions must become apperceptions by the controlling power of attention; very gradual is the dawn of consciousness, marked as Rosmini thinks by the first smile. So too there is an epoch at which self-consciousness seems to awaken. Maurice and other philosophers have marked the dawn of it by the use of the personal pronoun.

Consciousness and self-consciousness.

The baby new to earth and sky,
What time his tender palm is prest
Against the circle of the breast,
Has never thought that "this is I":

But as he grows he gathers much,
And learns the use of "I" and "me,"
And finds "I am not what I see,
And other than the things I touch".

So rounds he to a separate mind
From whence clear memory may begin,
As thro' the frame that binds him in
His isolation grows defined.

Then, as in teaching science or language we first awaken the powers of observation, and lead the child to reflect, so here, in the case of the self-conscious subject, we help the child to interpret the facts of the inner life as well as the outer.

Whilst recognising the danger of forcing the subjective in children, we ought in this, as in other things, to follow the guidance of nature, and surely our own experience, and that of most children, will show how much they are occupied with their own feelings, with the struggles of the higher to subdue the animal nature, and how through contest they are developing the will-power, which is the only safeguard of later life.

It is especially important early to correlate the subjective with the objective in early teaching. Surely much irreligion results in later life from the divorce of the two. As we guide the observing powers in the outward life, so as the power of reflection develops we should do with the inward life: the child is conscious of the pang which comes to all of us, when we act against conscience: that pang which makes our blood run cold, as we feel we have done wrong, is as much a fact of experience, as real, as the sensation of heat, when we touch hot iron. Would people grow up to deny the existence of the spiritual consciousness, if they had been led to question their own experience? A beautiful story is told by Parker and quoted by Armstrong.[1]

Conscience.

"When a little boy in my fourth year, my father took me to the farm and sent me home alone. I had to pass a pond. A rhodora attracted my attention. I saw a spotted tortoise sunning him-

[1] *Man's Knowledge of God.* Swift.

self in the shallow water at the root of the flaming shrub. I lifted the stick I had, to strike; though I had never killed any creature, I had seen boys destroy birds, squirrels and the like, and felt a disposition to follow their wicked example. All at once something checked my little arm, and a voice within said clear and loud, 'It is wrong'. I held my uplifted stick in wonder at the new emotion, the consciousness of an involuntary but inward check upon my action, till the tortoise and rhodora both vanished from my sight. I hastened home to mother and asked what it was that told me it was wrong. Taking me in her arms, she said: 'Some men call it conscience, but I prefer to call it the voice of God. If you listen and obey it, it will speak clearer and clearer, but if you turn a deaf ear, it will at last leave you in the dark without a guide: your life depends on your obedience to its voice.' No event in my life has made so deep and lasting an impression."

A witness for the spiritual, the universal.

The fact that we cannot get rid of the consciousness of wrong, shows that there is a higher Self condemning the self, one other than ourselves; we must not force answers on the child, but we can bring into his consciousness the presence of the holy and righteous God. We may help to make clear and permanent in his consciousness the facts, which he will only later interpret—the conflict of the merely individual, the selfish life, with the larger, the all-embracing life of unselfish love.

We may appeal too to the experience of each child, who suffers punishment rather than disobey conscience. Such victories establish faith, convince us that we are

more than creatures of time, that we are sons of God. Every true and self-denying act that a child is able to do is a ground of confidence; "I write unto you, young men, because ye have overcome the wicked one". Each time that the mere animal desires are subdued by the love of truth and righteousness, we prove that we transcend the things of time and space. These are the eternal things, which eye sees not and thought cannot conceive, and yet for the sake of these unseen and eternal things men live and die, and count all earthly things as nought. Do not the hearts of all children "burn within them" as we expound to them the Scriptures which tell of heroes who have done battle, who laid down their lives for righteousness' sake, of Him who triumphed from the Cross? We can appeal too to the inward experience of those who are naughty; they do not in their inmost heart wish to be so, but they try and fail; nothing is more touching than the penitence of children, when they find that we have seen the good which is hidden, and not only the evil that comes forth—that we know, not only what is done, but what is resisted. We can, as in the old myths, show that their deliberate choice is not for selfish pleasure; they would if offered the things most delightful to the mere animal, refuse all, if they could have it only on condition of becoming wicked and cruel and deceitful. Hauff's *Cold Heart* is a beautiful story on the subject. Thus should we base healthy religious experiences upon facts, and foster habits of attention and obedience to the inward voice.

Right ambitions too should be fostered, the desire to enter into the Divine purposes in thought and word and deed, to be a fellow-worker with God. This will take

more definite form in the later idealising period of life; still there will be developed sometimes at an early age earnest desires to become wise and good and to do some special work.

For objective formal teaching the little ones would begin with the stories of the world's child- hood. The lessons first given in a simple form will be expanded in the higher classes. The child who has learned to trust his father, will learn from Abraham's sacrifice that we can trust God; the higher classes will see how by the frustration of his purpose Abraham learned the true meaning of sacrifice; the Psalms and Prophets will carry on the subjective teaching, and the words of the old prophets will become a fact of experience; "the word of the Lord came unto me". Order of teaching.

The inner meaning of the sacred myths which had once been told as a mere story will now be felt; the story of the flood as interpreted by St. Peter, and quoted in our baptismal service, the deliverance from the bondage in Egypt, typifying redemption from the slavery of sin, the New Testament teaching of the synoptical gospels, especially the parables, will have supreme educative power.

It is essential that in this, as in other subjects, written exercises which require thought be set, and corrected and criticised—this is often the only subject in which pupils are not required to formulate their thoughts—hence there exists a vast amount of current religious phraseology to which no definite meaning is assigned; the words may be true in themselves, but not true for the person using them. An American writer tells of one who for years was a Written work.

regular attendant at church, and often encouraged him by her attentive and responsive expression; when he came to know her later, he found to his surprise that she was as ignorant of the fundamental truths as if she had been brought up in a heathen land.

Sceptical phases.

The later period, that of ripening experience, of adolescence, will give the maximum of reflective, as the earliest childhood, the maximum of the sensitive power. As the mysteries of their own being are more and more unfolded, the problems of philosophy and metaphysics have an attraction which should not be disregarded: there is a desire to be alone; the young feel that they must work out the problems for themselves, and they resent the attempt to force on them other people's solutions. They must question ere they can fully believe; we must never give utterance to the profane idea, that God is angry with those who make mistakes in seeking truth, only show that truth like light is a good, that we may not rest in an indolent agnosticism, for we cannot grow vigorous and strong out of the sunlight; we must encourage them, in this as in all studies, to be ever seeking a fuller knowledge of truth, to live by the truth they have attained, and then they will gain more and more, even through the mistakes. The function of the teacher now is as Socrates described it, to be ready to give help, when needed, to bring to the birth the great thoughts which oppress the soul.

Need of leisure.

Later the deep spiritual experiences of St. John and the arguments wherewith St. Paul convinced himself, will come home to the religious experience at least in some degree, and the words in which he describes the vision of God as seen from the spirit-

ual heights, which he had reached in his later epistles. But there must be for the ripening of the character time for quiet, and the incessant activities of to-day, the filling up of every hour, the deprivation of quiet even on Sunday, are much to be regretted, and all educators should see that those who need time for spiritual thought, for working out the great questions which come to every thoughtful person, should not be deprived of it, because some would misuse it. There are two excellent articles in the *Pedagogical Review* for July, 1897, on the "Psychology and Pedagogy of Adolescence," by E. Lancaster, and another, a study in "Moral Education," by J. Street, both Fellows of Clark University; the second article is especially emphatic on this subject.

Systematic reading.

In the highest classes, some systematic reading regarding the history and foundations of philosophy in general and Christian philosophy in particular should not, I think, be omitted: one cannot do better than begin with Plato; taking the *Apology*, the *Crito* and parts of the *Phædo*, or the two volumes of selections by Professor Jowett, or some less expensive edition. The *Memorabilia* of Xenophon is obtainable for 3d. Selections might be made from Aristotle's *Ethics*, and some good history of philosophy be made accessible, *e.g.*, Schwegler's, edited by Dr. Hutchison Stirling, which is not too long; and some such inspiring book as Fichte's *Vocation of the Scholar* may be recommended; other books I might mention, *e.g.*, Henry Jones on Browning; Professor Fraser's selection from Berkeley; Mackenzie's *Social Philosophy* and the series of small hand-books edited by Professor Knight. There might be meetings for discussion and

reading under the presidency of one versed in such matters; this would give definiteness to thought, and would at least lead to the kind of wisdom which made the oracle pronounce Socrates the wisest of men; such meetings would be specially useful for the staff. Some effort should be made to establish the primary convictions which alone make life worth living, enable one to possess one's soul in patience, live in the faith that each is working out the will of the All-Wise and All-Good—if willingly, then with the fullest joy and reward.

Higher teaching.

The subject is not ignored at the University Colleges of the States, and there is much of deep interest in the article to which I have referred, *viz.*, "Psychology of Adolescence". In an article by Caswell Ellis, the special training of teachers of religion is insisted on, and the establishment of professorships. "A department of pedagogy cannot be called complete that does not deal with this important part of its field. Religious training is as much a problem for the pedagogue, as is physical or mental training. Surely we cannot entirely separate them. We have already at our command in the Universities, many helps in the study of the Bible, of theology, of philosophy, of psychology, etc.; why cannot there be found some man of broad culture, wide sympathies, reverent spirit, to focalise these in a chair of religious pedagogy, or whatever it may be called? it would give the opportunity while in college to look at the larger phases of the problem of religious training. No subject is more vital, and our best men need not leave college ignorant of the problem or the possibility of its solution—and find in the decline of life that (as

editors, preachers, etc.) they have been spending their energies on reformation, while the great work of formation was never considered."

The means of giving a thorough and systematic teaching regarding the strong foundations of faith, is one that should be considered by all educators. It is true that the emotions and affections are, as in the case of all personal relations, the appropriate means of intercommunion; but the religious life, if it is not to become weak and sentimental, needs the bracing power of intellectual study, and the Scriptures, especially the writings of St. John and St. Paul, afford such exercise.

Foundations of faith.

I may perhaps summarise the lines on which the grounds of a rational faith seem to be established, and which should surely be formulated, as we formulate the principles on which we base our faith in matters of science. They may be arranged under two heads—objective and subjective:—

1. Sense compels us to recognise the existence of a universe, to which we can set no bounds of *space* or *time*. We find everywhere at work forces adapted to produce results immeasurably greater, yet similar in character, to those produced by our own exercise of thought and will; we are unable to conceive of either except as ultimately proceeding from a personal mind and will.

Since our mind interprets the phenomena of sense, which is the language of Nature; since the intelligent mind is related to an intelligible universe, the finite mind must be related to the infinite, man must be the child of God.

The facts of history show us man in all ages re-

nouncing all that the animal craves for, for the sake of the ideal, the transcendent.

2. Man is self-conscious, he can become an object to himself; that he can do this proves him to have a dual nature. The higher sits in judgment on the lower, or animal nature (identified with the individual) seeks to bring it into obedience to the universal. Since we can identify conscience with the universal mind and will, we infer that we are on the one side in communion with God, as on the other with the universe.

Man has the power of sympathy. As we cannot conceive of light without postulating an all-comprehending æther, through which all things are related, so the fact that we are affected, actually feel physically and mentally with others, is inconceivable without postulating one all-embracing Personality.

The faith that good must ultimately triumph is an axiom of the moral life; we find it impossible to believe the reverse.

These are some of the broad bases on which rest the Christian dogmas of the relation of man to God the All-Father, which tell of a perfect Son, and of the power given to all to rise through grace into the spiritual life.

I have dwelt on the subject at some length, because it seems to me that the intellectual relation to God has been too much ignored; we should love with the mind as well as with the heart; with the developing of the physical and psychical life, the soul craves to root itself more firmly on the consciousness of the universal, it desires to be at one with the All-Wise and the All-Good Father of spirits to work out the purpose of its own

existence. It seeks to be in harmony with all who are living by the highest ideal; hence the impulse to work in associations, specially in the spiritual life, for life must overflow into action! It seeks evermore to be at one in its being, and to bring the individual self into harmony with the all-embracing Spirit in whom we are one.

I may recommend to teachers the recently published volume on *Religious Teaching in Schools*, by Dr. Bell of Marlborough.

PART II. MATHEMATICS.

ARITHMETIC.

By DOROTHEA BEALE.

Multiplication is vexation,
Division is as bad,
The Rule of Three doth puzzle me,
And Practice drives me mad.

Never will such lines express the feelings of properly taught children.

IT may be convenient to work out the process of teaching arithmetic on strictly psychological principles.

(1) From the concrete to the abstract. Let the children learn to count with the actual things.

Concrete teaching first.

Once the teacher would have set the child down to a slate, taught it to count, and write down the figures, and work sums in addition and subtraction, and then to learn the multiplication table. Now the child has actual things—stones, coloured beads, sticks, bricks—anything but marbles (which one of H.M. Inspectors recommends) or things which run about freely. A box of china buttons, which cost only a few pence the gross, is perhaps best.

(2) Associate doing and knowing. Let the child add actual things: Mary has 3 buttons, Anna gives her 2, she now has 5.

(3) Put thoughts into words. Get the child to say exactly what addition is—"giving to"—and let her find out from words she already knows or may know, as donation, donor, etc., the meaning. The sign + for addition may also be given.

Similarly, subtraction ought to be actually performed by drawing away, and the word explained—its connection with drag, traction, tray, dray, etc. Thus the common fault of writing "substraction" may be avoided. It should be thought of as undoing addition. The signs − and = may now be given.

(4) We learn by analysis and synthesis, *i.e.*, to see the parts in the whole, and the whole as made up of parts. It is very useful at this stage to get children to group numbers, to think of 2, *e.g.*, as 1 + 1, of 3 as 1 + 1 + 1 and 1 + 2, of 8 as 1 + 7, 2 + 6, 3 + 5, 4 + 4, 2 + 2 + 2 + 2. This is much insisted on in Germany and America. In kindergartens there are many pictures which are used for grouping numbers, thus, *e.g.*, a seven-branched candle-

Analysis of numbers.

stick. We may give 7, as 3 + 1 + 3, as 1 + 2 + 2 + 2, as 1 + 6. This makes numbers, so to speak, easily fall into their constituents, which will be shown to be of use later. I knew a child who habitually thought of the written figures as picturing the number. Children might arrange the 9 digits in various ways, thus, giving also the written figures;—

•	••	•••	••••	•••••	••••••	•••••••
1	2	3	4	5	6	7
	•+•	•+••	•+•••	•+••••	•+•••••	•+••••••
	1+1	1+2	1+3	1+4	1+5	1+6
			2+2	2+3	2+4	2+5, etc.

At this stage the question would naturally arise why there are only 9 figures, and an historical digression could be conveniently made. I give a sketch of such a lesson before coming to more difficult and abstract things.

Historical methods.

Dogs are very clever. A collie will go with the shepherd and take care that none stray. Suppose one has disappeared over a cliff when he was not looking, would he know one was gone, would he count like the shepherd? No, he will track out a lost sheep, by scent, as we cannot, but I never heard of a shepherd setting the dog to count. If puss has 3 kittens and you take 1, she seems not to know. Some savage races can count only a few numbers, but man carries a ready-reckoner in his fingers, and most can easily count up to 5 or 10, or, if taking in the toes, up to 20; all the higher races are marked out by their greater power of doing long and difficult sums.

Now, suppose some great owner of sheep, as Abraham or Jesse, sent out a shepherd with many sheep, how would he know each day whether they were all right? Well, the simplest way would be to have two stones for each—the master could have one bag and the man another, and then they could calculate each night; *calculus* is the Latin for a stone. The shepherd would need a long bag for his stones. Was that how David happened to have the one which he used as a sling to kill Goliath?

Suppose, however, the flock was very large, a bag of stones would be heavy. Has a shepherd something else, which, instead of his exactly carrying, seems to help to carry him? The shepherd's staff. Could he not put notches on this for his sheep? It would hold a good many; but in days when people had to use stones for knives, it was not so easy to cut a great many notches, and besides it would get used up with a large flock. Could he not make a sign like a hand, V, for every 5 sheep? That was what the Romans did, and next they said, why not have a sign for two hands, X, and let that stand for 10? So, if they wanted to write sixteen sheep, they would put XVI instead of sixteen strokes. You see in the Bible the Roman numbers. The Greeks used letters, too, as the Romans did, for numbers.

When people began to trade they wanted something more than tally sticks and stones—something the value of which all knew. Amongst pastoral people the most ready things to calculate by were sheep or cattle. A piece of land would be sold for so many sheep, but it would be very inconvenient to have to drive your money about, and so people seem very early to have had pieces of metal which were reckoned to be equal in value to sheep or cattle, and to save weighing, each piece had, perhaps, a sheep scratched on it; and this was called in Latin (from *pecus*, cattle) *pecunia*, *i.e.*, the piece of metal representing the value of cattle. This would be carried about and exchanged. Lawyers now put in our wills "goods and chattels"; by the first they mean houses and lands, which cannot be moved; by the latter, things which, like cattle, can be moved. Then people could have

Money.

larger and smaller pieces of money, representing half or a quarter of a sheep, or many sheep.

Account-keeping.

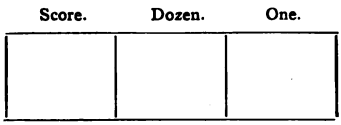
You wonder, perhaps, that people did not have books to keep their accounts in, as we do; but in early days people's books were made of clay, and were more like our slates, and they scratched on them with a sharp instrument called a stylus, which looks something like our stylograph, but had no ink inside, and they could not put these in their pockets.

Modern arithmetic.

It was not till the beginning of the third century before Christ, that the Greek Archimedes proposed a plan not altogether unlike ours, because he was a very clever scientific man, and he wanted to do difficult sums, which he could not with the old Greek system. And something of the kind was used in India. But it was not introduced into Europe until about 1000 years after Christ by the Arabs, who had made many conquests. The first English book about it seems to have been written in the reign of Edward III. Chaucer, who died in 1400, talks of the "figures newe," *i.e.*, the figures we use now, instead of those difficult Roman characters which we find in the Bible.

But I think that before that, people had begun to use some such plan as ours. Have you ever heard of public-houses being called "The Chequers," and seen a painted board hung up covered with squares of different colours? This was once a sign for a house of public entertainment, where people could make reckonings, and the place where they reckoned the money they paid was called a "counter," and the court belonging to the king where the people paid their taxes was called the Court of Exchequer.

Suppose a man came into an inn, he would find the counter marked with lines thus :—



and he could have say 3 glasses of beer ; the landlord would put a chalk mark for each, but when he had had 12, one mark would be put instead in the next row, or in the third row if he had had a score, *i.e.*, 20, and these marks would correspond with pieces of money. Thus we have pence and shillings and pounds, and we put dots between instead of lines to mark them off.

Here we will take *real* pieces of money. Suppose £1 „ 14 „ 6 has to be added to $\overset{\text{S.}}{7}$ „ $\overset{\text{D.}}{9}$. I say 9 and 6 make 15 pence. I change the 12 pence into one silver shilling, add that to the 14 shillings and the 7, and I get 22 shillings. 20 shillings is one pound, so I change that and leave the 2 shillings. Thus I get altogether £2 „ 2 „ 3. We can now write that in figures and add, as before. Suppose I had to pay to A £1 „ 17 „ 9, and I had £2 „ 14 „ 6. We can first do the sum with real money. I find I have not enough pence to give 9, so I have to change one of the shillings, then I shall have 18 pence, out of which I give 9, and write down 9 left. Now, I have only 13 shillings, and I want to pay 17, so I change one pound, then I have 33 shillings, out of which I take 17 and have 16 left. When I have given the pound, I have none left, and there remains in my purse $\overset{\text{S.}}{16}$ „ $\overset{\text{D.}}{9}$. We

can then also write it down thus—putting the money we have to take away below, pounds under the pounds, shillings under shillings, etc.

£	s.	d.
2	„ 14	„ 6
1	„ 17	„ 9
16	„ 9	

Decimals.

After a while people all agreed to have for general arithmetic what we call the decimal notation, or reckoning by tens, and so lines were drawn, and figures in the first row were worth one, in the second ten, in the third ten tens, *i.e.*, 100; after that would come figures representing ten hundreds or a thousand, and then ten thousands, and then a hundred thousands; and so we could go on to any length. Ten seemed such a natural number to use, because we all have our ready-reckoner in our ten fingers.

hundreds	tens	units

We can have bags containing 10 buttons, 100 buttons, and then we can get change. Sonnenschein's box makes carrying very clear. Suppose I want to put down 5 thousands, 9 tens and 3 units or ones. I should write it thus, and if I wanted to add to this 2 thousands, 9 hundreds and 9, I should write that below. Then I should say 9 units and 3 units make 12 units. But this is equal to 1 ten and 2 units, so I should carry on 10 to the second row, and write down 2 in the unit row. Then I add the 1 to the 9, that makes 10, but 10 in the second row is the same as 1 in the third, so I carry that on; 9 and 1 make 10, but 10 in the third row

Addition.

th.	hun.	tens	units
5		9	3
2	9		9
8			2

makes 1 in the fourth, so I carry again, and get $5 + 2 + 1 = 8$ thousands, and we should read it 8 thousands and 2.

Then after a while people said, "Why need we have all the chequers? suppose we put a nought when there is no number, just to mark that there is a row, and all will come right;" so they wrote thus:—

th.	h.	t.	u.
5	0	9	3
2	9	0	9
2	1	8	4

Subtraction.

And a little later they left off writing anything at the top of the line, because every one knew. Here is a subtraction sum. We cannot take 9 units from 3 units, so we get change from the next row, that gives 13 units, from which we take 9, and have 4 left. We have nothing to take from our 8 remaining tens, so we write 8. We have no hundreds, so we cannot take away 9, but we change one of our thousands into 10 hundreds, and take away 9, leaving 1; lastly we take away 2 from our 4 thousands, and get 2—altogether 2184.

Now would come in naturally the extension of this system of notation to decimal fractions, marking the unit by a full stop. If numbers decrease as we go from left to right, they might get smaller than one; the next row to the right would be one-tenth of a penny or of an inch, and the next one-hundredth, and so on. Sums in addition and subtraction might be worked at this stage with decimal fractions. Then it should be pointed out that to push the number a row farther from the point which marks the unit row increases it tenfold, and pushing to the right diminishes tenfold.

Decimal fractions.

hun.	tens	units		tenths	hundth.	thousandths
1	3	2	.	7	9	
	2	5	.	8	9	7

It is good practice and interests young children to work in different scales of notation—one may suggest that Goliath would prefer the 6 or 12 scale.

It would be well now to give children some practice in counting backwards, and in rapid *viva voce* addition, which the exercises in analysis of numbers will have made easy. *E.g.*, 15 + 7, the number naturally falls apart into 5 + 2, and we get 22; 29 + 7, it falls into 6 + 1, at the next step into 3 + 4.

Multiplication. We should next proceed to continued addition or multiplication. Many children come to school not knowing that multiplication is continued addition, and still fewer have any idea that division is continued subtraction. In entrance papers I have had sheets covered in reply to such questions as "How often can 19 be subtracted from 584?"

A few multiplications should be worked with real things. Thus, we have to give to 5 people 3 buttons each. We arrange them in parcels of 3 and add 3 to our pile five times. Now, if we have 15 and want to know how many times we can take away threes, we find we can do it five times over; this is subtraction or undoing the addition. It is the same as making little parcels of 3 each, and so continued subtraction is called division. Some continued addition sums should be given, thus: Find 4 times 891. It will be easily seen that such sums are done much more quickly if we know by heart how much 4 nines come to, and how much 4 eights; and so people learn their addition tables by heart, and children make them out for themselves thus, generally up to 12 times, some learn up to 20 times. Here is part of 7 times worked out:—

$$\begin{array}{r} 891 \\ 891 \\ 891 \\ 891 \\ \hline 3564 \end{array}$$

7	times	1 =	7	7	7	7	7	7	7	7	7	7	7
				7	7	7	7	7	7	7	7	7	7
7	,,	2 =	14	7	7	7	7	7	7	7	7	7	7
7	,,	3 =		21	7	7	7	7	7	7	7	7	7
7	,,	4 =			28	7	7	7	7	7	7	7	7
7	,,	5 =				35	7	7	7	7	7	7	7
7	,,	6 =					42	7	7	7	7	7	7
7	,,	7 =						49	7	7	7	7	7
7	,,	8 =							56	7	7	7	7
7	,,	9 =								63	7	7	7
7	,,	10 =									70	7	7
7	,,	11 =										77	7
7	,,	12 =											84

The signs × and ÷ may now be given. All tables should be written out and learned, and it is well to say both ways, $6 \times 7 = 42$, and $7 \times 6 = 42$. There are certain numbers that are easily remembered, others in which children habitually make mistakes: it is a waste of time to hear the tables therefore all through after a time, but these difficult ones, 7×8, 6×9, 11×11, etc., should be insisted on; then, finally, the whole heard through, and any about which there is the slightest hesitation asked for daily. If children can learn up to 20 times without much trouble, it is an advantage.

We could next point out that this continued addition is called multiplication, and all the numbers made up by continually adding threes would be called multiples of 3, *i.e.*, many times 3. So 12 would be a multiple of 2 or 3 or 4.

Then examples should be worked, but here let me say that at the early stages concrete examples should abound. Many good books there are containing mis-

cellaneous examples of concrete quantities, such as, There are 319 fruit trees planted in each field for making jam, and there are 12 fields; how many fruit trees? Or, 7 labourers have to be paid on Saturday £17 each; how much will they get in 12 weeks?

When children know the effect of pushing numbers to the left, multiplication by two figures will be easy, but the child should be accustomed to write at the end of each row the real sum, thus: 73 × 25:—

73
25
1460 = 20 times.
365 = 5 ,,
1825 = 25 ,,

and to work the same sum in a variety of ways, *e.g.*, multiply by 5 × 5; by 100, and divide by 4; by 30, and take off 5; by 10, halve and by 10 again and halve:—

73
5
365 = 5 times.
5
1825 = 5 × 5 times.

4 | 7300 = 100 times.
1825 = ¼ of 100, or 25 times.

73
30
2190 = 30 times.
365 = 5 ,,
1825 = 25 ,,

2 | 730 = 10 times.
365 = 5 ,,
3650 = 50 ,,
1825 = ½ 50 = 25 times.

It is well to accustom children to begin to multiply with the left-hand figure, as we shall see later. Thus we get the most important part first.

It should be insisted on that division is undoing multiplication—that if we divide 63 by 9, we are finding a number 7 which when multiplied by 9 gives 63. In working division sums it is better to put the quotient over the dividend, and the children should be ready to explain each step thus: Divide 3496 nuts amongst four schools equally. None will get as many as 1 thousand. They will get, out of 34 hundreds, 8 hundreds each; of 29 tens, 7 tens each; of 16 units, 4 each.

Division.

$$4\overline{)3496}\quad 874$$

Long division should be fully explained thus: Divide 43921 amongst 23 people. We see that no one will have as much as 1 ten-thousand. Out of 43 thousands, each can have 1 thousand, and there will be 20 thousands left, that is, 200 hundreds; adding 9 we get 209 hundreds. We give 9 to each and 2 hundreds or 20 tens are left. 22 tens do not give one each; they equal 220 units. Of the 221 units we give 9 to each. Some dispense with the written multiplication. This seems to me to strain too much young children's attention, and to lead to loss of time.

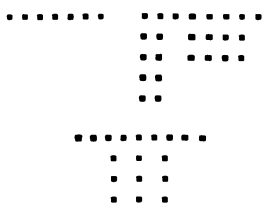
$$\begin{array}{r} 1909 \\ 23\overline{)43921} \\ 23 \\ \hline 209 \\ 207 \\ \hline 221 \\ 207 \\ \hline 14 \end{array}$$

Here, while continuing to work many miscellaneous examples, it may be well to interpose some useful exercises on matters interesting and yet puzzling to children, on factors and measures of numbers, and primes and squares. If they get quite familiar with factors, they will not have such difficulty as they do when they come upon the whole set at once: factors, common factors, measure, common measure, G.C.M., multiple, common multiple, L.C.M.

Factors, measures, multiples.

Let us bring out the box of buttons once more and arrange the numbers, finding the factors. 1, 2, 3 have only the number itself, and so these are called primes, because they have no other factor than 1, the first number.

But 4 is not only 4 × 1, it is 2 × 2, and we may notice that the dots form a square—it is a compound number. 5 is again a prime; 6 can be arranged in three ways—in a row of ones, in three rows of 2 or two rows of 3, but these are the same if we look at them a different way round, *i.e.*, 2 × 3 is 3 × 2. 7 is a prime, but for 8 we can have 2 × 4 and 4 × 2, which are the same. 9 is again a square number; it has no factors except 3. Here we might give the expressions 2^2 for 2 × 2, 3^2 for 3 × 3 and 3^3 for 3 × 3 × 3.



We might go on to pick out all the primes by what is called the sieve of Eratosthenes, and to give all squares and cubes, say up to 100. Sometimes we speak of measure of numbers; 4 can be measured into rows of twos, 6 into rows of twos or threes, so 2 is said to be a common measure of 4 and 6.

After working some examples in factors and measures, it will be well to leave the matter, returning to the subject later. I should pass over for girls the wearisome exercises in weights and measures, bills of parcels, etc., very slightly. These things belong to the

shop rather than the school, and waste the time that should be given to learning principles.

We may proceed at once to fractions. In nothing is the advice *Festina lente* more valuable than now. Once give the children a clear idea of what a fraction is, how the two numbers represent respectively the size of the pieces and the number taken, and all will be easy. They are already familiar with ½d. and ¾d., so we can get from them that the lower figure stands for the number of pieces into which the penny is divided, and that the figure above shows the number of pieces taken. Many fractions should be drawn by the children—⅚ of a line, a circle, a square, etc. The fraction may be written thus: $\frac{5}{6}$ numberer / namer,

Vulgar fractions.

5 gives the number of pieces taken; is numberer or numerator;

6 gives the number of pieces into which the whole is cut, the size, the name, the denominator.

Let there be plenty of such questions as these: What is the effect of increasing the numerator or the denominator? Of doubling each? Of halving each? Notice that most things grow larger the larger the number, but with a fraction the larger the denominator the smaller the pieces. Children should not have books giving explanations. They must discover these by the dialectic process, and then in their own words answer questions, and sometimes explain every step in the sum they are working. All we require in books are well-chosen examples. Those who have not taught, have no idea how hard children find it to get really hold of the nature of a fraction. Homely illustrations should not be spared. For instance, there are two ways of getting much cake.

To take many pieces, that is have a large numerator, —or to look out the biggest piece, that is have a small denominator

Multiplication and division by integers.

We are now ready for multiplication and division by integers. Take $\frac{5}{12}$. There are two ways of making the fraction twice as large, that is by taking twice as many pieces, that is $\frac{10}{12}$, or twice as large pieces, $\frac{5}{6}$. The shortest way must always be insisted on. Similarly $\frac{4}{5}$ may be divided by 2 in two ways. Many examples should be worked out in detail thus:—

$$\frac{3}{14} \times 7 \div 3 \div 4 \times 5 \div 8.$$

$$\frac{3}{14} \times 7 = \frac{3}{2}; \ \frac{3}{2} \div 3 = \frac{1}{2}; \ \frac{1}{2} \div 4 = \frac{1}{8}; \ \frac{1}{8} \times 5 = \frac{5}{8}; \ \frac{5}{8} \div 8 = \frac{5}{64}.$$

Nearly all children will write thus: $\frac{3}{4} \times 2 = \frac{3}{8} \div 3$ etc., and leave the whole unreadable.

Next should come the proposition 7 is 8 times as large as $\frac{7}{8}$. (Some pupils might be ready to use letters by this time, a is b times as large as $\frac{a}{b}$. The teacher must be on the watch for such.) It is very difficult for young children to see this, and also that $\frac{7}{8}$ is the same as $7 \div 8$ This should be illustrated by drawings in a varietv of ways.

By fractions.

On that would follow multiplication of fractions by fractions, which is explained as making a mistake and correcting. Thus if we have to multiply $\frac{5}{7} \times \frac{2}{3}$, we know how to multiply by 2, so we do that first: $\frac{5}{7} \times 2 = \frac{10}{7}$ But we have multiplied by a number three times too large; to correct the mistake, we must divide by 3; $\frac{10}{7} \div 3 = \frac{10}{21}$. Similarly, we explain division. Not until some sums have been worked in detail should pupils be allowed to get hold of the rules. They should work with factors only, whenever possible.

Now we might return to the subject of multiples and measures. We have $\frac{16}{24}$. We want to have it in its simplest form. We divide it into factors: $\frac{16}{24} = \frac{2 \times 8}{2 \times 12}$; 2 is a common measure of both ; the 2 above makes the fraction twice as large, the 2 below twice as small, so both may be taken out. But we might have said $\frac{16}{24} = \frac{8 \times 2}{8 \times 3}$; 8 is the largest number that will measure both, so it is called the greatest common measure. I think it better not to give the ordinary rule for finding G.C.M. until its proof can be given algebraically. It is very seldom that children will fail in the attempt to analyse numbers, and so find out all their common measures. Reduction.

The common rules should now be given for finding at sight when a number is commensurable by each digit, though the reason of these rules will not perhaps appear yet. These children know at a glance whether a number can be measured by 2, 4, 8, 3 or 9, and remove the common factor. G.C.M. and L.C.M.

Suppose we have $\frac{8008}{9009}$, we cannot see a common factor, but we can proceed to break it up, one being commensurable by 8 and the other by 9. Then we get $\frac{8 \times 1001}{9 \times 1001}$, and the greatest common measure comes to light. We see that the numerator of $\frac{1176}{2205}$ is commensurable by 4 and 3, *i.e.*, by 12, the denominator by 9 :—

$$\frac{1176}{2205} = \frac{3 \times 4 \times 98}{3 \times 3 \times 735} = \frac{3 \times 4 \times 2 \times 49}{3 \times 3 \times 5 \times 147};$$

so the G.C.M. is 49 × 3, or 147.

I may here notice there is an ingenious table by Mr. Ellis, published by Philip at 6d., showing graphically the common measures and multiples of numbers up to 36, which makes this matter clear. I give a section of it :—

	1	2	3	4	5	6	7	8	9	10	11	12
Ones	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪
Twos		▪		▪		▪		▪		▪		▪
Threes			▪			▪			▪			▪
Fours				▪				▪				▪
Fives					▪					▪		
Sixes						▪						▪
Sevens							▪					
Eights								▪				
Nines									▪			
Tens										▪		
Elevens											▪	
Twelves												▪

We find at a glance the primes.

Looking down the line we see the multiples thus, 12 is a multiple of 1, 2, 3, 4, 6. Looking horizontally and moving down, we come to all the measures of each number.

It is also useful for teaching fractions.

Common denominators.

We should next proceed to bring fractions to a common denominator preparatory to addition and subtraction. It is not always easy to find a number that will do for all the denominators. We want a common multiple, and of course the smallest we can have is the best. For this we have only to break up the denominators into factors and make up a number which shall contain all these. I would not let the pupils work at first by the mechanical methods sometimes given : $\frac{7}{230} + \frac{3}{46} + \frac{11}{621}$

Here $\left\{\begin{array}{l} 230 = 2 \times 5 \times 23 \\ 46 = 23 \times 2 \\ 561 = 3 \times 3 \times 3 \times 23 \end{array}\right\}$ We want therefore as the common denominator $2 \times 5 \times 23 \times 3 \times 3 \times 3$, which is 6210.

Suppose we want to add $\frac{2}{3} + \frac{3}{4} - \frac{7}{8} + \frac{11}{24}$. I should write what we may call skeleton fractions below; I mean simply the line; next enter the denominator 24. This is 8 times as large as 3, *i.e.*, we have made the pieces in the first 8 times as small, so we take 8 times as many. Only after working a fair number of sums should children write all in a single fraction thus :— Addition of fractions.

$$\frac{16 + 18 - 21 + 22}{24.}$$

If we have larger numbers, the pupils must never be allowed to make a number of long-division sums, but work thus : $\frac{7}{230} + \frac{3}{46} + \frac{11}{621}$. They would factorise and put down $\frac{7}{2 \times 5 \times 23} + \frac{3}{2 \times 23} + \frac{11}{3 \times 3 \times 3 \times 23.}$ To get the common denominator we see we must multiply the first by $3 \times 3 \times 3$; the second denominator by $5 \times 3 \times 3 \times 3$, the third by 5×2 :—

$$\frac{7 \times 3 \times 3 \times 3 + 3 \times 5 \times 9 + 11 \times 5}{2 \times 5 \times 23 \times 3 \times 3 \times 3.}$$

I have not given a complete exposition, but touched on what seems essential as regards the method and the order of teaching, derived from my experience of children's difficulties, some will think, I fear, at unnecessary length.

In regard to the later rules for decimals, I need only make two remarks: that the points should be always removed from the divisor, *e.g.* :—

$$\cdot 000035 \div 5 \cdot 9623 = \frac{\cdot 35}{59623.}$$

and the point put in as soon as we reach the decimal fraction. In working circulators it is well for a time to express the equations thus: $\cdot\dot{3}\dot{2}\dot{9}\dot{4}$ = No.

$$\begin{array}{r} 10{,}000\ \text{No} = 3294{\cdot}294, \text{ etc.} \\ 10\ \text{No} = \quad 3{\cdot}294, \text{ etc.} \\ \hline 9990\ \text{No} = 3291 \end{array}$$

$$\therefore \text{No} = \frac{3291}{9990}$$

Proportion.

As regards proportion, I need add little. But there is one vexed question: Shall we let children work by the unitary method? I think not, at least not those who are likely to go on to mathematics. We cannot get the thought of proportion too ingrained, and the unitary method evades it.

In compound proportion I would make pupils work out the double process in detail, and then with factors only, *e.g.*:—

If 5 men dig a trench 14 ft. long in 3 days, how long ought 12 men to take to dig one 28 ft. long? Put in tabular form thus:—

Men.	Long.	Days.
5	14	3
12	28	?

First confine attention to the length of trench.

Ft.		Ft.		Days.		Days.
14	:	28	::	3	:	6

Now we have to consider the consequences of altering the men:—

Men.	Days.
5	6
12	?

Men.		Men.		Days.		Days.
12	:	5	::	6	:	$2\frac{1}{2}$.

But we could have arranged it thus and worked it out fractionally at once:—

$$\begin{matrix}14\\12\end{matrix} : \begin{matrix}28\\5\end{matrix} :: 3 : x$$

$$\frac{3 \times 28 \times 5}{14 \times 12} = \frac{\cancel{3} \times \cancel{2} \times \cancel{14} \times 5}{\cancel{14} \times \cancel{3} \times \cancel{4}} = \frac{5}{2} = 2\tfrac{1}{2}$$

If practice sums are done, the meaning of each line should be marked at the end thus :—

Price of 984 yds. at £2 „ 15 „ 6.

£		
984.....	price at	£1.
1968.....	„	£2.
492.....	„	10s.
246.....	„	5s.
24 „ 12...	„	6d.
2730 „ 12...	at	£2 „ 15 „ 6

Approximate methods should be practised, and for this reason it is well to get the habit of multiplying by the larger number first. Approximations.

Suppose we want a sum accurate, say to 3 decimal places. We remove the point from one of the factors, pushing it, of course, an equal distance in the other. We make the whole number reversed the multiplier, and begin with the fourth decimal figure (one beyond the one we need). This will give the fourth place as the first number, since we are multiplying by units. In the next row we must take in the fifth decimal, since we are multiplying by 10, and so on. Here is a sum worked out at length and an abbreviated one :—

Find correct to 3 places of decimals 3·45 × ·00059692 :

3·45 × ·00059692 = 345 × 059692

·059692	·059692
345	543
17907600	2984
2387680	23876
298460	179076
20·593740	20·5936

In division we approximate by cutting off a figure each time from the divisor as soon as we have come to the number which is one less than the number of digits still to be found. Get correct to five places.

```
454523) 1453679 (·31982
        1363569
        -------
          90110 0
          454523
          ------
          446577
          409068
          ------
           37509
           36360
           -----
            1149
             908
             ---
             241
```

I might summarise the order of teaching fractions thus :—

Summary.

What a fraction is—mixed numbers, improper fractions.

Effect of increasing or diminishing numerator or denominator.

Multiplication and division by integers.

Proposition a is b times as large as $\frac{a}{b}$.

Multiplication and division by fractions.

Meaning of $\frac{2}{3}$ of $\frac{7}{8}$.

Measures, common measures, factors, common factors.

Reduction by inspection.

Meaning of commonmul tiple, common measure, L.C.M. and G.C.M.

Bringing to common denominator.

Addition and subtraction.

There are interesting papers by Potts of Cambridge, 2d., published by the National Society, giving the history of arithmetic. I have found it throws much interest into the subject to teach it historically. It seems to me that various things at present included in arithmetic books should be deferred; *e.g.*, present values, annuities, etc., which no one would be likely to attempt who is unacquainted with algebra.

Exclusion of some subjects.

The Mathematical Conference called by the Committee of Ten, U.S.A., writes as follows, and I quite agree with its view: "The conference recommends that the courses in arithmetic be abridged and enriched—abridged by omitting entirely those subjects which perplex and exhaust without affording any really valuable mental discipline, and enriched by a greater number of exercises in simple calculation and in the solution of concrete problems. Among the subjects which should be curtailed or omitted are compound proportion, cube root, abstract mensuration and the greater part of commercial arithmetic. Percentage should be reduced, and the needs of practical life—profit and loss, bank discount, compound interest, with such complications as result from fractional periods of time—are useless and undesirable. The metric system should be taught in application to actual measurements, and the weights and measures handled.

"Among the branches of this subject which it is proposed to omit are some which have survived from an epoch when more advanced mathematics was scarcely known in our schools, *e.g.*, cube root, duodecimals; so far as any useful principles are embodied in them, they belong to algebra, and can be taught by al-

gebraic methods with such facility, that there is no longer any sound reason for retaining them in the arithmetical course."

I do not insist on algebra for all; it gives the same sort of mental discipline that arithmetic does, and so, educationally, is not of special value. Geometry, on the other hand, gives a different kind of training—opens a different set of ideas. Many girls, therefore, do not learn algebra, especially those who come late with no clear ideas about arithmetic. Those who have been taught arithmetic well from the beginning can be led on to use algebraic symbols and letters very early.

As soon as a pupil has gone through the course I have recommended, she is ready to take up algebra in a systematic way—I shall suppose she has already been familiarised with the use of letters as general symbols.

MATHEMATICS.

By Dorothea Beale.

How and when can we best introduce mathematical teaching? We have to do at present in girls' schools with many who have come to the age, say of fifteen or sixteen, with no mathematical teaching except a very slight knowledge of arithmetical processes. For these it seems to me more important to give the mental training afforded by some initiation into geometrical ideas and methods, than to teach algebra.

Beginnings in the kindergarten.

For the children (and they are happily a rapidly increasing number) who have had good teaching in the kindergarten, one may frame a course more approaching the ideal. Children can be quite early familiarised with geometrical forms and figures, and learn some of their simpler properties in connection with the drawing and modelling lessons.

Practical geometry.

The Conference on Mathematics, called by the Committee of Ten, U.S.A., recommends that children from the age of ten should have some systematic instruction in concrete or experimental geometry. "The mere facts of plane and solid geometry should be taught, not as an exercise in logical deduction and exact demonstration, but in as concrete and objective a form as possible; the simple properties of similar plane figures and solids should

not be proved, but illustrated and confirmed by cutting up and rearranging drawings and models. The course should include the careful construction of plane figures by the eye and by the help of instruments, the indirect measurements of heights and distances by the aid of figures drawn to scale, and elementary mensuration plane and solid."

A small book by Paul Bert, *First Elements of Experimental Geometry* (Cassell), is very suggestive, and would throw much interest into the subject. Spencer's *Constructive Geometry* may be referred to, but it is not altogether satisfactory. A useful and practical book is *Geometry for Kindergarten Students*, by Pullar (Sonnenschein).

Geometry before algebra.

I consider that geometry should be preferred to algebra in order of time, because, as I have said, arithmetic gives the same kind of mental training as algebra, whereas from geometry the learner gains a unique mental discipline.

Its educational value.

Thus the learner is taught to frame a definition; he has to put before the imagination the abstract generalised idea, and then describe, in words clear and precise, what is in the mind. Each proposition begins with a general statement regarding what is to be proved, or to be done, and compels us to have a clear idea of what we are going to talk about before we begin. The sub-enunciation makes us bring the general into the region of the particular, and infer the general from it. We must for the demonstration select certain relations relevant to the subject and omit all others, and we must be ready to give a reason for every assertion. Thus geometrical teaching trains the judgment and forms a

most useful and logical habit of mind. One finds the tendency is greatly checked to use words without any clear idea of their meaning, to plunge into a subject without having set in order in the mind, what is the matter to be discussed, or the problem to be solved, and order is introduced into the general work in all other subjects of study.

Leads up to the region of ideas.

But geometry has still higher uses in the process of mental development. It is, so to speak, the link between the real and the ideal; as Professor Cayley has said, "imaginary objects are the only realities, the ὄντως ὄντα, in regard to which the corresponding physical objects are as the shadows in the cave";[1] if, on the one hand, it opens the gates of science, on the other it leads us to philosophy, and so Plato is said to have placed over the door of the Academy, "Let none enter here ignorant of geometry".

To study geometry is to enter a new path, and we do not see at first to what heights it leads, upwards to the universe of ideas; ideas are nothing for sense, and yet they are the most necessary things for the every day life we lead. Thus, a point, though it exists not, yet as a thought-dynamic is—it moves and traces out lines which do not exist, and yet give us direction, and are of most practical use; by them we calculate the height of real things, we guide our ships, we find paths in the heavens. Again, moving lines give us planes, and these, which exist only in thought, as they move, form what we call solid figures, *i.e.*, something which occupies space.

[1] Presidential Address, Brit. Assoc.

Forming definitions.

Of course, no one who is grounded in the principles of real education, would think of letting children begin by learning definitions; they must be made to put their vague notions into words; and it will be well for them to see how difficult this is, *e.g.*, in the case of a straight line, an angle, though the notion is quite clear to the mind's eye. It is surprising to those who have not taught the subject how long it takes girls, who have not been trained to exactness, to bring out, *e.g.*, the definition of a circle. They will say, all lines drawn from the centre are equal; or all lines drawn from the centre to the circumference are equal.

No child should be allowed for a long time to see a Euclid. Each proposition must be treated as a rider, and a copious supply of riders provided in addition; the child helped to discover the solution or the proof, then set to write it; if wrong it must be gone over again and again; it will take a long time to get through a very few propositions thus, but later all is easy.

Methods of teaching.

It appears from the report of the Oxford Local Examinations, August, 1897, that the methods of the dark ages still prevail in too many schools; we read: "In many cases candidates who wrote out correctly all propositions for the first six books sent up attempts at problems that can only be described as grotesque, and showed their complete failure to understand the subject, giving the unpleasing impression that all they knew was learned by heart".

Euclid.

As a formal introduction to Euclid for young pupils, I know nothing better for the teacher to study and use than Bradshaw's *First Step*. Many others might be named. The Harpur *Euclid*

is good (Longmans), and Books I. and II., by Smith and Bryant, may be specially recommended. Still I regret that the text-book in England is Euclid; its inconsistencies are manifest; we stand alone in keeping it. Yet a good workman will make the best of his tools, and there are editions which remedy many of the defects. One would, however, hope that some day Societies for the Improvement of Geometrical Teaching and Reformed Spelling will rejoice together. It does seem an anachronism not to have an angle as large as 180°; to use the circle, and think of a circumference, yet refer to no other loci, and work out in a cumbrous manner the propositions of Books III. and IV.—to talk of lines touching and not make use of limits. The more a teacher knows of the higher mathematics, and looks forward for the pupil, the better will he teach the rudiments. The treatment of the subject by Professor Henrici (London Science Class-books, Longmans) seems excellent, but I do not know how far it would answer for young beginners. I should be glad to have the experience of some who have tried it. The professor derives the notion of a point from a solid, particular figures from infinite planes, and proceeds generally in an inverse direction from that of Euclid; the nomenclature is admirably compact, and must result in a large economy of thinking power—the notion of a locus is introduced early, and the methods employed lead up to the modern or projective geometry.

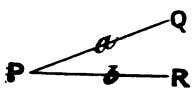
I once spent some time at Zurich, a town especially remarkable for its intellectual activity, and chiefly for its mathematical school. Through the kindness of Professor Kinkel and other friends, I easily obtained

permission to be present at various lessons in the Polytechnic and Canton School. I found the method there similar to that which we follow. The pupils used as a text-book Wolff's *Taschen-buch*, a duodecimo of less than 300 pages, which contains the principal results in pure mathematics and the applied sciences, but no demonstrations. I heard a lesson given in the Canton School. Professor Weileman first read the proposition; it was the same as Euclid, XI. 2: to draw a perpendicular to a plane from a given point without it. About a dozen held out their hands to show they were ready to demonstrate. The professor selected one, who took his place at the board, and, subject to correction, worked the problem. The professor gave as little direct instruction as possible, appealing rather to the class. I was much struck with the eager interest that the class (I think it was Class II. B) took in the work. The next proposition (in Wolff) afforded much amusement. The demonstrator jumped to the conclusion that the lines required to complete the construction would meet, and could not be made to see he had assumed what required proof. Other members of the class offered to take the matter up; he was accordingly superseded by No. 2, who having surmounted this difficulty, also broke down before he reached the end. No. 3 therefore took his place at the board. Thus were the reasoning and inventive powers of the boys developed, and a keen interest awakened; there was no weariness, no apathy.

I make a few remarks on what may seem to some trivial matters, yet which are of importance to beginners.

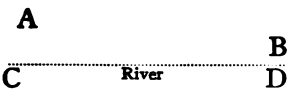
In giving the proof at the board, there is no need to use three letters, and drag children by their help round

every angle; we can write a Greek letter or a number, as we constantly do in trigonometry, or we could colour the angles · say the red is equal to the blue, and let the children write out the propositions in an abbreviated form first; or we might adopt the convenient and concise plan of Professor Henrici: let capitals stand for points, small letters for lines, and let angles be represented by the small letters with ∠ prefixed. Thus we have line PQ or *a*; PR or *b*; and ∠ QPR or ∠ *ab*;



anything to avoid tediousness is good; children are so bored by verbosity.

Riders need not be always mere lines without any human or scientific interest. Suppose instead of saying —From two points to draw lines to a given line, which shall make equal angles with the given line, we say—Let CD be a mirror or a wall, a ray or a ball strikes it at P, draw the direction it will take after—or, There is a big house A, and a little house B, near a river—the man in B has to fetch water for A daily, where should he draw the water so as to go the shortest possible distance?



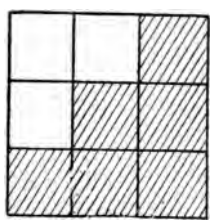
The method of determining the distance of the moon can be made clear long before a child is able to conceive the trigonometrical ratios, and if we are able to arouse an interest in astronomy, we may excite ardour in some which will make hard thought and work

delightful. The distant prospect of the mountain top has a wonderful power of leading us on. The writer can never forget the joyful enthusiasm with which she threw herself into the study of mathematics in consequence of hearing courses of lectures on astronomy from Mr. Pullen of Cambridge, Gresham Professor of Astronomy, and the late Vice-Chancellor of Cambridge has described to her the power which the first realisation of the wonders of the boundless universe had over him when a boy of fourteen.

Mr. Glazebrook has suggested that some insight may be given to those who have no high mathematical ability into what seems so marvellous to the uninitiated, the development of curves from equations.

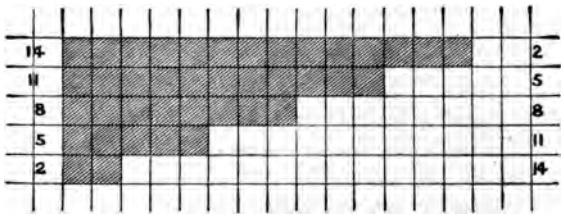
Algebra.

The close relation between algebra and geometry becomes apparent in Euclid, Book II., but this might be shown somewhat earlier by methods such as those recommended by Mr. Wormell in the first pages of *Plotting or Graphic Mathematics*. We can see by a figure that $1 + 2 + 3 + 2 + 1 = 3^2$,



and lead the pupil on to the general proposition which is in constant use, when treating of falling bodies.

Or we can show similarly that the sum of an arithmetical series equals $\frac{a + l}{2}$.



As regards the formal introduction of generalised arithmetic or algebra, one cannot lay down any limit of age, owing to the very untrained state in which girls come to secondary schools, but with children who have been taught thoroughly the principles of arithmetic up to fractions, it is easy to introduce literal symbols and so prepare the way: this should be done much earlier than is usual.

Children well taught in arithmetic might perhaps begin the subject formally about thirteen, and I think it well for the first term to drop arithmetic altogether, so as to get as much time as possible for overcoming the initial difficulties, and making use of the zeal which a new study gives; but of course every good teacher of arithmetic will train his pupils to use letters for numbers very much earlier. There is a good deal put into arithmetic books, which would be much better dealt with by algebraical methods, and should be postponed, *e.g.*, involution and evolution, and much time should be saved by omitting long sets of examples on weights and measures, etc., and giving sums to be worked out mechanically with large numbers. As in arithmetic, it is extremely important to give an insight into the composition of quantities, so that de-composition may be easy, subsequent mechanical work in multiplication, division, involution, etc., minimised, and

the pupil reach sooner the more attractive branches of the subject, and feel the power it gives.

Mixed mathematics.

If children have acquired early a fair knowledge of geometry and algebra, they may, say at sixteen, be ready to pass on to those branches in which the alliance of the two is most intimate, and which are so closely correlated with all the teaching in mechanics and physics. It takes most girls some time to assimilate the ideas of the trigonometrical ratios, and it is fatal to hurry them.[1] Those who are able to proceed further, and enter upon the study of co-ordinate geometry, usually take great delight in it; and it is well, too, to lead them gradually on by some such books as Proctor's *Easy Lessons in the Differential Calculus*, to form some idea of what a powerful instrument the *Calculus* is, before they actually make use of it or formally study it; it takes time for a new method to infiltrate the mind of an ordinary student.

Historical method.

Finally, I would once more recommend that, whenever it is possible, pupils should be led along the path of discovery pursued by original investigators, both in physics and applied mathematics; I have found the interest of logarithms greatly increased by this method.[2]

[1] I may add that there is an interesting chapter in Herbart's *A B C of Sense-Perception*, in which he works out trigonometrical ratios on the basis of his philosophical system: this chapter would interest those teaching mathematics.

[2] Professor Salford (*Monographs on Education and Health*) insists on the importance of teaching logarithms as a part of scientific arithmetic. "Often logarithms are first taught in connection with trigonometry, and the average pupil does not learn the difference between a logarithmic and a natural sine; there is no cure for this confusion but to teach logarithms where they belong and to apply them to purely arithmetical

Professor Lodge's popular book, *Pioneers of Science*, is very much appreciated by the young, and I may quote *à propos* evidence given by Dr. Bryce of Glasgow before the Royal Commission of 1864 :—

"Pure mathematics cultivates the power of deductive reasoning, and as soon as boys are capable of forming abstract ideas, and grasping general principles, as soon as they have got correct notions of numbers, and an accurate knowledge of the essential parts of arithmetic, and have made some progress in geometry, then natural philosophy may be advantageously taught. I speak on this matter from experience. My relative and colleague, who had charge of the mathematical department in the Belfast Academy, introduced natural philosophy as part of the work of all the mathematical classes. After these classes had gone a certain length in geography and algebra, he took up the elements of natural philosophy two days in the week, as part of the work of every mathematical class. He began with simple experiments, and according as the progress of the boys in Euclid and algebra admitted of it, more mathematical views of natural philosophy were introduced. The great advantage of the study of physical

problems." He advises the introduction of logarithms "as soon as the pupil has reached in algebra the proposition $a^m \times a^n = a^{m+n}$, and he should be shown that the practical method of dealing with powers and roots is the logarithmic. Teachers will then abstain from annoying young pupils with difficult and needless problems solved in the antiquated manner; they will learn how to calculate a compound interest table, an excellent exercise in itself, as well as a labour-saving contrivance in arithmetic. The reason why logarithms are so little appreciated, is that teachers of arithmetic have not as a rule really learned their use; they go on wasting time in arbitrary exercises in evolution, interest, etc., done by tedious methods, and do not appreciate how instinctively the best calculators employ logarithms."

science is that, when properly taught, it interests boys in intellectual pursuits generally. For instance, Newton's great discovery, the identity of the power which retains the moon in her orbit with terrestrial gravity, was being explained to a class of from twelve to eighteen boys. The teacher did not tell them the result; he enumerated the phenomena by which Newton arrived at it, taking care to present them in the order most likely to suggest it. As fact after fact was marshalled before them, they became eager and excited more and more, for they saw that something new and great was coming; and when at last the array of phenomena was complete, and the magnificent conclusion burst upon their sight, the whole class started from their seats with a scream of delight. They were conscious that they had gone through the very same mental operation, as that great man had gone through. The consciousness of fellowship with so great a mind was an elevating thing, and gave them a delight in intellectual pursuits. An unusual proportion of those boys who passed through the Belfast Academy during the twenty years that I was able to have natural and physical science taught on those principles, have, as men, been distinguished and successful; and they owe it, I am convinced, in a large degree to the taste for intellectual pursuits thus formed."

PART III. SCIENCE.

PSYCHOLOGICAL ORDER OF STUDY WITH SPECIAL REFERENCE TO SCIENTIFIC TEACHING.

By DOROTHEA BEALE.

AS Rosencranz expresses it, there may be distinguished three epochs:—

I. The intuitive—I use the word with the German meaning of sense-perception.

II. The imaginative, during which the developing mind is more accustomed to dwell on mental images, is less passive to impressions, more active in calling them up, in fashioning them anew.

III. The logical, during which the impulse is to harmonise the world without and the world within, to fit all things into a scheme of space and time, of order and law.

Regarding these, we may ask what is the thought-material in which the developing mind may best work successively—or if we take the same material, in what varying way shall we deal with it? The near objects which the children can touch and taste and see objectively, these are the first things which call forth the attention, that self-activity by which the mind fastens on its prey, and converts

percepts into concepts; as the jelly fish catches the floating prey in its tentacles, and absorbs it into its substance, so the child stores up experiences and memories which enrich all future percepts.

Botany.

What subject of systematic study can be better suited to the child then, than that which calls out its sense of wonder and beauty, and which in harmony with its own restless nature is ever changing; in which is found endless variety with underlying order? Surely the world of flowers is specially suited for teaching the little ones. How the colours and forms delight them—has not the first sight of a flower remained with many of us through life, "a joy for ever"? It is for us to teach how to observe, so that the memories shall be not mere vague impressions, but clear-cut, accurate, lasting: all the senses must combine to give unity and completeness to the sense-concept, so that the child may feel the beauty, enter into loving sympathy with Nature, and perfect that "inward eye, which is the bliss of solitude". Children should be led to form collections, by which the first observations may be repeated and fulfilled; they should also learn to draw, so that not merely the individual, but the essential, the typical may be brought into clearness; we should, too, encourage in them the desire to co-operate with Nature in making the earth beautiful, and call out the affections towards the Unseen Giver of all good things.

These are a few of the reasons why botany in its simplest forms is fit nourishment for the child. The hard names, the intricate divisions into classes and orders, the physiology of growing plants can be touched on only lightly; but the power of observation can be greatly developed, and the main facts of classificatory

botany can be taught, and teaching full of interest given as regards structure, growth, seed distribution and relations to the insect world. Mrs. Bell's Science Ladders form a good introduction. When we have exhausted our material, so far as the little child is capable of understanding, it is better to turn to some fresh subject; we may later, when the mind is ripe for these things, take the subject up again. Children whose eyes have been opened, will be able to go into the country, and note down the things they have seen. Diaries I have seen quite beautifully kept by poor children taught at the House of Education at Ambleside. The children knew the different buds as they came out on the trees, and watched the delicate and deepening tints, saw the leaf-buds develop into leaves, and the opening of the flowers.

Zoology.

Elementary botany should, I think, be followed by a year of zoology (say at ten years old), treated in a simple way; the teacher should dwell not upon the internal structure, but on what presents itself to the eye, beginning with living creatures that the children are familiar with, or can get to know —domestic animals, "beasties" from garden and pond, caterpillars and birds, tadpoles and dragon-flies—they should have their menageries, and watch the creatures' habits. Especially suited to women is the work of observing insect life, and there are worlds for us to discover, if we, as we walk round our garden, have eyes to see.

The animal world too is specially calculated to develop the affections rightly. The character of the human being is too complex, too far above the understanding of the child, and as long as he is dependent, he should not be exercised in observing and chroni-

cling the doings of those whom he cannot yet understand. It is something to give him objects, on which he can exercise his powers of criticism and observation. So too the sense of responsibility may be fostered towards those who depend upon him, and are in his power.

Astronomy.

These two sciences bring the child into contact with things on the earth; he might next lift up his eyes to the heavens. It delights the child to learn the names of the constellations, and trace their forms, to notice the movements of the planets, the changing aspect of the sky as the years go round. The sense of the greatness of the universe gradually dawns on him, and the awe and reverence for that power and wisdom which is revealed in the heavens, prepares the way for those deeper teachings which belong to religion. Especially stimulating is astronomy to the developing reflective powers, from the number and variety of problems it suggests; and yet it is not altogether baffling, for the child can be led on to draw conclusions respecting the movements and distances of the heavenly bodies; very early he can be shown how to solve such questions by simple processes, and thus the mathematical passion awakened; surely most of us can remember the first time that our soul really ascended into the seventh heaven. I have heard a mathematician describe what it was to him—how at fourteen he fled from the school into the fields to be alone.

Physical geography.

And what next? There is something near to the child, which he can touch, which lies at his feet, a magic book with mysterious characters, in which he reads of infinite time; let him open the pages of the great rock-book, and gather the relics of

the past. Geology will help him to observe in a new way; astronomy and geology (I use it in the sense of earth-history) are more suited than the two first to the beginning of the reflective period, because there is nothing to be done to alter the objects of the two last sciences—whereas we can do much, and observe the effect of our doings on plants and animals.

Physiography, including geology and all that has to do with the phenomena of Nature included under the head of physical geography, would claim a two years' course and unify the subjects already touched on: the pupil will learn many facts on physical science.

And now the girl, say about fifteen, with an increasing power of abstraction and reflection, and a greater knowledge of mathematics, will be ready to receive more formal and definite instruction regarding what we call matter and force—elementary physics; the subjects of light and heat, electricity or chemistry might be selected; the girl is becoming the woman—the reflective powers are gaining the ascendant—she is longing to interpret more than to gain ever more knowledge, she understands something of physics and chemistry; let her return now to her first study and carry it still further, see the mysteries of life revealed in the flower, take physiological botany, the chemical changes produced by the physical processes, watch the plants as they grow, and trace the relation of flower and insect, plant and animal—recognise that all-embracing intelligence working in all, which has harmonised not only the outward things, but the intelligence of every living creature, and made each able more or less to know the laws of their life and to obey them. The developing and deepening religious instinct will find utterances from heaven in these earthly

things, hear the voice of God among the trees of the garden. Later still we can pass into the inner temple, treat of physiology, show how marvellous is the living tabernacle of the soul, how fitted for our temporary abode.

It is objected by some that physiology should not be studied because it involves the whole circle of sciences, whilst others regard it as the most necessary and fundamental branch of instruction. Experienced teachers know that much of great educative and practical value can be given on the lines of Mrs. Bray's *Laws of Health*, and brought home to comparatively uneducated people by the tracts of the Ladies' Health Society, and we all know how important it is for those who are growing into womanhood, that the subject should be treated with the wisdom and judgment and reverence which it demands

On the later stages of the teaching of natural science I do not propose to dwell Those who take up science as a speciality will have to limit the field, and others will be guided by circumstances, but whatever special line they may follow later, such a course of study must surely have nourished the powers of the mind, developed the sympathies, disciplined the character, enlarged the horizon beyond the petty concerns which occupy the whole attention of the uneducated of all sorts and conditions. The woman who has really thought about these things when she travels will see things with different eyes she will understand enough to profit by the companionship of able and thoughtful men, and later perhaps to share it may be a man's work as Miss Herschel, and Mrs. Huggins, and Mrs. Proctor, and Mrs. Marshall, and Mrs. Sidg-

wick and many more—to be the friend of her brothers and the first teacher of her sons—and she will surely have learned the first lesson of wisdom, the humility which knows that all we know is to know that our knowledge is as nothing in the presence of the Infinite, that if any man think that he knows, he knows nothing as he ought to know it.

I have worked out the order in detail in respect to science; it will be enough to touch very briefly on the parallel teachings in other subjects, which must also be taught scientifically.

Take, *e.g.*, language. The child is ever observing and imitating; restless activity characterises the child.

The teacher has to perfect the observing powers by insisting on right pronunciation, as I have shown in another chapter, first in English, then in another language; knowledge is first empirical.

Next will follow, not grammatical definitions and rules to be learned, but the discovery of classification, just as in the case of botany, through observation—the discovery of rules inductively; then, when the need is felt for a shortening of the process, the collections made by grammarians may be produced, as the book of dried specimens, say of ferns, which the child had not time and opportunity to collect for herself. Afterwards will come reading and reflection upon the relationship of words, like the systems of scientific classification of flowers, and later the age of poetry and philosophy. It is the giving the grammatical abstractions to children who are at the stage of observation merely, which creates the distaste for school learning; it is the giving dead languages at a time when children are at the active, intuitive age, and have not the

powers of thought necessary to disentangle the classical authors, that makes so much of our teaching a failure.

So with history. First the simple tales, *e.g.*, Jack and the Giant—no complications of character there—good and bad, black and white—stories of fairies and hobgoblins, beings so unlike ourselves, that we are not troubled too much with moral scruples; they are like dream people. Then old-world heroes, in whom the moral emerges—not the priggish boys and girls, to cramp the character, but boys and girls, writ large. Then passing from the individual to the general, the specimen to the species, we have family life enlarged to the state under a kingly constitution, as in ancient patriarchal times, the first teachings of which are best gathered from the Old Testament. As in the nature teachings we shall lead children to feel underlying all the sense as of an unseen presence, a King of Kings ruling the course of this world, leading and guiding the mind of man to work with Him as in the nature realm. And lastly in the highest teachings, which have to do, not with the objective surroundings, but with the man himself, with his thoughts and aspirations, with the expression of these in literature, in art, in ethics, and politics, and philosophy, the student will find enough to develop the highest powers of thought, as he wrestles with the problems of life, when he has reached the later period of study.

And the same order is observed in religion. The objective first—the Divine acts seen in nature, in the acts of the good, in the punishment of evil; at first the thought of God is more objective, since it must be so in the early life of the child under parental government.

Later more subjective, through conscience. Sin is at first regarded chiefly as an act against a loving person, later it is felt to be the degradation of our nature, or that of others, by taking in a poison as it were; or as *ἁμαρτία*, the frustration of the true ends of our being, the exclusion from the light and life and joy of the Divine presence, which is the soul's sunlight, into outer darkness—the conceptions formed will be different, the underlying truths one, the thoughts will pass from the physical to the panpsychical, and later to the highest conceivable by us — the anthropomorphic, stripped of the transitory and the finite, but embracing all those eternal things by which we know that we are more than creatures of time, since we gladly throw from us all that would then be our highest good, for the things which eye sees not and ear hears not, but which can come to us by revelation only of the spiritual; things which all men, in all ages, have felt to be the best, whatever their actions may have been, truth, love, righteousness, justice, the eternal things.

> The worst man knows in his conscience more
> Than the best man does, whom we bow before.

THE TEACHING OF THE BIOLOGICAL SCIENCES.

By CHARLOTTE L. LAURIE.

Introduction.

THE biological sciences deal with the manifestations of life. This distinguishes them at once from the physical and chemical sciences; not, indeed, that it is possible to understand the life of any organism without some knowledge of physics and chemistry; thus to explain intelligibly the circulation of the blood some acquaintance with mechanics is necessary, but organisms have certain properties which belong to them from the very fact of their being endowed with life; the inherent properties of protoplasm, its contractility, irritability, etc., are all vital properties due to the presence of life.

The first point then that a teacher of biology has to decide in order to teach this subject rightly is: What is it possible to teach about life? Is this nineteenth century with its marvellous electrical discoveries any nearer the secret of life? Although it may fairly be claimed that the manifestations of life are better understood, yet scientists will be the first to confess that what life itself is still remains a mystery; *therefore* the teacher of biology must never be satisfied without arousing in the minds of his pupils a growing consciousness of the limitations of knowledge, the basis of true reverence. Any teaching of science, not only of biology, which fails to do this is defective.

The teacher of biology then will desire first of all to develop a reverent attitude of mind, so that the facts of life may be understood aright. Observation of vital phenomena is by no means an easy thing; it needs much accuracy, constant patience and minute attention to detail. In school teaching the foundations of accurate observation ought to be laid. Botany affords much scope for this. In planning lessons, in choosing specimens for home work, the teacher should aim at developing this faculty. A lesson on a buttercup may very well be followed by home work on a marsh marigold. The two plants belong to the same order and have great similarity in structure, but certain important differences; the tendency of unobservant pupils will be to conclude that the same description will apply to both, and possibly nectaries will be described as present on the sepals of the marsh marigold instead of on the carpels, etc. As a rule, home work should demand original observation on the part of the pupils; it should not be a mere repetition of what has been done in class; thus, supposing the sweet-pea has been worked through in class, clover may be set for home work, provided of course that the class is sufficiently advanced.

Development of observation (*a*) in class and home work.

Then, as regards the observation of vital phenomena, it is possible to show that plants, like animals, take in oxygen. The details of "Garreau's experiment" can be contrived even in schools where there is no physiological laboratory; with a water plant such as *Anacharis*, the evolution of oxygen in the making of starch can be demonstrated; and with such a simple thing as yeast growing in sugar and water, it is easy to show

that carbonic acid gas is given off by fungi; more elaborate experiments are necessary to demonstrate the evolution of this gas by green plants. The teacher should always point out any similarity of process in plants and animals; transpiration of plants should be compared with the perspiration of animals, so that after a few lessons on the physiology of plants, it is possible to indicate the essential differences between plants and animals as far as they are known.

In zoology, as in botany, the teacher should aim at developing the power of observation, but zoology is a much more difficult subject to teach well; for it is not always possible to get animals for observation, consequently lessons in zoology are often dry; they are wanting in that living interest which comes not from book study, but from watching the animal itself. Where, however, this has been done, keen interest is aroused. A teacher who has spent hours off the coasts of Devonshire, pulling sea-anemones out of the crevices of the rocks, or watching them expand their tentacles and draw them in, will give a very different lesson from one who has merely read about a sea-anemone.

A class, having lessons in zoology, should have access to an aquarium, which can be kept in the class-room, and in planning a course on this subject, especially for young children, it is most important to choose those types which can be observed. In a first year's course for children of ten or eleven, preference should be given to the habits of the animals, and structure introduced only so far as is necessary to explain habit. Living specimens for lessons may be

obtained from aquaria in Jersey, Birmingham and elsewhere.

It is not possible, however, to do all that ought to be done in developing observation within the limits of an hour a week in a school-room. The teacher of botany or zoology should be willing to organise expeditions into the country for botanising or pond grubbing. Here we have a Field Club, consisting of three or four sections: botanical, geological, zoological, archæological. The teacher of each subject is naturally the leader of the section, and is thus able to arouse a keener interest than is possible in the class-room alone. A yearly conversazione, when collections are exhibited, gives zest to the working of the sections, brings all the members of the club together, and affords an opportunity for obtaining a lecture from some original worker. It is found that if 200 belong to a school society of this kind, each member subscribing one shilling a year, a conversazione can be held, and prizes for collections given out of the funds of the society; each member bears in addition her share of the expense of an expedition; but the less expensive and the nearer home these are, the better.

(*b*) By means of field work.

An excellent means of arousing a real interest in science lessons, and of developing the observation, is to have a school museum. That part of the museum devoted to natural history should combine two functions; it should have perfect specimens of the chief types of animal life arranged morphologically; for instance, the covering organs, such as scales of fishes, feathers of birds, hair of animals, should be grouped together, so that the homology of these

(*c*) Through a museum.

organs can be seen at a glance; secondly, the museum should have surplus specimens specially intended for teaching purposes. One specimen will not serve these two purposes; for the only way of preserving any specimen in its perfection is to keep it under lock and key in a glass case, which *must* be air- and dust-tight. As soon as a specimen is taken out and passed about from teacher to teacher and from class to class, it will inevitably get damaged, as the curator of many a school museum can testify.

What share can the pupils take in the museum work? They may furnish specimens, but here the difficulty is to get them perfect enough; children require to be trained to aim at a standard of perfection, and in this particular the school museum may do valuable work; at the same time if the curator demands too much, the ardour of the children becomes damped; so it is sometimes well to accept an imperfect specimen, and put it in the museum until a more perfect one is forthcoming. Pupils can also do much useful work in making diagrams and drawings; every specimen in the science portion of the museum should be drawn, and parts explained by means of an accompanying diagram. Reference may here be made to the scheme at the end of this paper for a specimen museum case, illustrating the flowering plant. It has been drawn up on the lines of the Natural History Museum at South Kensington, where, as is well known, great attention is paid by Sir William Flower to the homology of organs. This scheme has been carried out in our museum; almost every specimen has been illustrated with a drawing done by pupils, the scientific explanation being written by the teacher.

In the first instance, as the case was being arranged, specimens and diagrams were merely *pinned*, not gummed, so that as the work progressed it was possible to alter and improve upon the first arrangement.

(*d*) Use of microscopes.

In connection with the development of observation, a word may be said about the use of the microscope in schools. Every school should have at least one microscope, if even it has only one or two powers; a great deal can be done with a 1-inch and 2-inch objectives. At present many girls take the course required by the University of Oxford for the Senior Local without having seen a single structure under the microscope. This ought not to be, especially now that microscopes are so inexpensive (a microscope with 1-inch and $\frac{1}{4}$-inch objectives can be obtained for £3 6s.).

There is considerable difficulty in managing microscope work with large classes; not more than two pupils, or at the most three, can work at a microscope at the same time, and where there are only one or two microscopes in a school, the simplest plan is for the teacher of botany to have pupils out singly, whilst the rest of the class are doing paper work at their desks. Lantern slides are an immense help in class work, but they cannot altogether take the place of the microscope, and it is very important that elder pupils likely to do anything at science should learn to manipulate the microscope.

Order of lessons.

In no subject is it more necessary to plan lessons carefully than in science, for not only does the development of the observing faculty depend on a right sequence, but the scope of science is ever widening.

Biology alone includes at the present time subdivisions which hardly existed thirty years ago. Teachers of botany now have to find time for vegetable morphology, histology and physiology, for the life-histories of plants as well as for the descriptions necessary to classification. At the same time there are other considerations, besides a right sequence, which must be borne in mind in planning a course. Theoretically, it would be best in botany to begin with a description of the plant as a whole; root, stem, leaf, flower, branch, and the relation of these parts to each other, should be the subject of the first lessons. But children of ten or eleven could hardly be expected to be interested in learning that a leaf is a lateral appendage of a stem, and a branch an axillary outgrowth, whereas they are fascinated by flowers, and enjoy lessons about the visits of insects to flowers, etc. Undoubtedly with young children it would be wiser to begin with the flower and gradually lead up to the plant as a whole. The teacher, too, must be guided to some extent at any rate by his own individuality. In a subject as wide as botany some minds are attracted by one part, some by another; one teacher can be so luminous in his account of structure and its adaptation to function that the children are in their turn interested, especially if minute structure is seen through the microscope, and the delight of drawing forms part of the lesson. Another teacher revels in classification, and loves to point out the resemblances between plants of one order and those of another.

There must be, and it is almost impossible to overemphasise this, a certain sequence, a certain gradation,

a definite plan, on which the lessons are arranged; but this plan, this sequence should be the teacher's own, it should be the outcome of his own individuality; he will best teach what most interests him, hence he had better follow his own order than that of any text-book, however excellent. In higher classes, where the work is arranged on examination lines, the teacher has a definite syllabus for his guidance; but even in this case there is play for his individuality, and nothing can dispense with this. He must be always reading the new books on his subject; he must keep himself in touch with the new work that is being done through visiting museums, botanical gardens, working in laboratories, etc., so as to be keen about his subject, otherwise his lessons will be dull and lifeless, and the unforgivable sin in a teacher is dulness.

Science cultivates the faculties of imagination and reasoning.

Although teachers of biology will naturally attach much importance to the development of observation, it is very necessary to remember that observation is only a means to an end, not an end in itself. If teachers aim only at cultivating the faculty of observation, they are likely to produce pupils who will make good collectors (a work not to be despised), but nothing more. The accurate observation of facts is absolutely necessary, but it is by no means the only thing to be done in science teaching. The power of generalisation, from the facts collected, should follow if science is to advance at all. It may be thought that this cannot be done in school work, but surely some attempt should be made in this direction, for it is most necessary that pupils should be taught to understand,

to some extent at any rate, when a generalisation is sound and when unsound. This is specially the case in teaching physiology; for instance, pupils are most interested in hearing something of the cell theory of the body, and can quite appreciate the bearing of the discovery, that the walls of the capillary blood-vessels are composed of cells, on this theory.

Science is not a matter merely of memory and accurate observation, it needs considerable reasoning power and much imagination, for without the power of seeing resemblances in facts, *i.e.*, true induction, progress is impossible. The theory of evolution, which has revolutionised not only science, but the whole thought of the present day, could never have been formulated had Darwin and Wallace been mere observers, however accurate, and in this connection a science teacher may be allowed to bear witness to the importance of the Humanities in the training of the mind. As a scholar of Shrewsbury Grammar School, Darwin had little training in science, but possibly without the mental discipline of the classics, he would have been unable to accomplish what he did for science in later life; for the higher walks of science require much imagination. In science lessons pupils may be called on to devise experiments for themselves, to invent diagrams, to find out resemblances, to note dissimilarities, in order to develop the faculty of imagination. Speaking very generally, in younger classes the aim of the teacher will be to cultivate the faculty of observation, in the upper to develop not only observation, but the imagination and power of reasoning.

Notes of a Specimen Lesson on Growth of Seedlings for Senior Oxford Class.

Time—one hour.

In a previous lesson the structure of the seed of bean, maize and sunflower has been given.

Material required:—

A. Seedlings of bean, maize and sunflower, ten days old; one of each kind for each pupil.

B. Seedlings of the above, three weeks old.

C. Seedlings grown in different media; water, sawdust, soil.

1. *The Seedlings of the Broad Bean* should first be examined.

(*a*) The radicle, observed in the seed, has given rise to the primary root, on which possibly lateral roots have begun to develop. This is an instance of a true tap root.

(*b*) The plumule is beginning to form the stem.

(*c*) The cotyledons are gradually getting smaller, for the seedling is feeding on them.

These points should be emphasised by means of the blackboard, the pupils themselves drawing the seedlings as exactly as possible, always naming each part.

2. *Seedlings of Sunflower.*—These the pupils should describe as far as possible by themselves. They should notice from the green colour and absence of soil on the cotyledons that they are above ground, and that there is a portion of the seedling between the cotyledons and the beginning of the root; this the teacher tells them is called the hypocotyledonary portion of the stem, and the pupils ought to be able

from previous lessons to explain the word, or even to make it up for themselves.

3. *Seedlings of Maize.*—Here the pupils will be able to describe by themselves the endosperm and the primary root, provided that only one root has shown itself. If the lateral roots have begun to develop, the teacher must explain which are lateral and which primary, and point out the difference between the primary root of this seedling and that of the bean and sunflower. It should be noticed that there is only one cotyledon, and here the point to emphasise is, that the bean and sunflower live on the food contained in, or made by, the cotyledons; the maize on the food present in the endosperm.

The seedlings three weeks old should then be compared with those already observed, the differences in length of radicle and plumule being noted.

The observation of these seedlings will naturally suggest the subject of growth. What is growth? By judicious questioning the teacher will show that it is impossible to define it, except by its manifestations in plants and animals; it is associated with the taking in of food; then by comparing the growth of a building or rock with that of a plant and animal, it will be possible to give some idea of growth by accretion as distinct from growth by assimilation; thus the mystery of growth will be gradually approached, the teacher pointing out that growth is only possible where there is life. This should be illustrated in every possible way, *e.g.*, growth of the body, of the mind, of a school, a nation, etc.

Lastly, the effect of environment on growth will be illustrated by the seedlings grown in different media.

The home work in connection with this lesson should consist of: (1) Descriptions of seedlings; instead of maize, wheat may be given; nasturtium instead of bean; these the teacher must have ready for distribution; a drawing of each should be insisted on, with parts named; (2) Short notes on the conditions of growth and its essential nature.

The children should also be invited to grow seedlings for themselves; these should be exhibited in subsequent lessons.

LIST OF BOOKS ON BOTANY.

(A) Text-books for Class Use.

Elementary Botany. By Joseph Oliver. 2/-. Blackie. Useful for S. Kensington and London Matriculation.

Elementary Text-book of Botany. By Edith Aitkin. 4/6. Longmans. This is specially suitable for Senior Oxford Course.

Student's Introductory Handbook of Systematic Botany (Blackie's Science Text-books). By Joseph Oliver. 4/6. This is one of the best text-books for Group E of Cambridge Women's Examination.

Practical Elementary Biology. By Bidgood. 4/6. Longmans. This gives most of the types, animal as well as vegetable, required for the Biology of Group E of Cambridge Women's Examination.

(B) For Teachers.

Naked-eye Botany. With Illustrations and Floral Problems. By F. E. Kitchener. 2/6. Percival & Co. Very useful for teachers of younger classes; it is most suggestive.

A Manual of Botany. By Reynolds Green. Churchill. Vol. i. Morphology and Anatomy. 7/6. Vol. ii. Classification and Physiology. 10/-. Very helpful for London Examination work.

The Natural History of Plants. From the German of Kerner von Marilaun. Translated by F. W. Oliver. 4 vols. 12/6 each. Blackie. This is a very readable book, full of suggestion and beautiful drawings, and not too technical.

Handbook of the British Flora. By Bentham. Vol. i., 10/6. *Illustrations of the British Flora*, vol. ii., 10/6. Reeve & Co. This is indispensable for the identification of species.

A Student's Text-book of Botany. By Vines. 21/-. Sonnenschein.
Practical Botany. By Bower and Vines. 10/6. Macmillan. Both of these are very technical, suitable only for advanced work.

MUSEUM SPECIMEN CASE.

BOTANY.

ANGIOSPERMS OR FLOWERING PLANTS.

ROOT.

Tap Root.—Seedling of Sunflower.

Primary Root.—Seedling of Maize (not a tap root).

Histology of root. Drawing of transverse section of a dicotyledonous root, showing axial arrangement of bundles.

Development of bundles. Illustrated by drawings of transverse sections of young and old roots.

Origin of lateral roots. Drawing through long: section of root, showing lateral roots arising from pericycle.

Forms of roots. Drawings of carrot, turnip, orchid, etc.

STEM.

(*a*) Underground stems.

Rhizome—Solomon's Seal.

Bulb—Long: Section of *Ranunculus bulbosus*.

Corm—Long: Section of crocus.

Tubers—Drawing of potato in different stages of growth.

Runner—Drawing of strawberry.

(*b*) Histology of stem.

Drawings of transverse and longitudinal sections of monocotyledonous and dicotyledonous stems.

Specimens of bast fibres of hemp, Mexican aloe, lace tree.

(*c*) Axillary outgrowths of stem or modified branches.

Tendrils—Sweet bryony.

Thorns—Black thorn and gorse.

LEAVES.

1. Drawing of poppy plant in five different stages, showing cotyledons, foliage and floral leaves, in illustration of Goethe's generalisation, "all lateral appendages of the stem are leaves".
2. Cotyledons. Seedlings of mustard, cress, nasturtium, etc. Drawings of bean to show fleshy cotyledons. Seedling of maize.
3. Covering leaves.
   (*a*) Bud scales from horse chestnut.
   (*b*) Bracts forming an involucre as in the wild carrot, black knapweed, acorn.
4. Foliage leaves.
   A typical leaf with parts named.
   Drawing of transverse section.
   Arrangement of foliage leaves, alternate and whorled (including opposite).
   The chief types of "simple divided" and "compound" leaves should be mounted.

Chief modifications of foliage leaves:—

(*a*) Tendrils for climbing—Vetch.
Petiole developed into tendril—Lathyrus aphaca (rare).

(*b*) Spines—Barberry.

(*c*) For food, *e.g.*, carnivorous plants, sundew, pitcher plant, bladder-wort.

(*d*) Modifications due to the medium in which the plant lives—Water crowfoot.

The Flower.

I. *Inflorescences.*—A specimen and diagram of each.

Racemose. (1) Capitulum, *e.g.*, daisy; (2) raceme, *e.g.*, lily of the valley; (3) spike, *e.g.*, wheat.

Cymose. 1. Dichotomous, *e.g.*, most of the Caryophyllaceæ.
2. Helicoid cyme. Forget-me-not.
3. Scorpioid cyme. Rock-rose.
4. Verticillaster. Dead nettle.

II. *Flower.*—Drawings (coloured alike throughout) to show hypogynous, perigynous and epigynous flower.

Calyx—Spurred, larkspur; galeate, monkshood.

Corolla—Papilionaceous, sweet-pea; bilabiate, dead nettle; rotate, convolvulus; cruciform, wall-flower.

Androecium—Diadelphous, sweet-pea; monadelphous, mallow didynamous, dead nettle; tetradynamous, wall-flower. Attachment of anthers—drawings.

Ovaries—Diagram of monocarpellary and unilocular, tricarpellary and unilocular, polycarpellary and unilocular, polycarpellary and multilocular; free central.

Ovules—Drawing of orthotropous, anatropous and campylotropous—each part of the ovule coloured the same throughout.

Fertilisation.

The two forms of primrose to show heterostylism.

Drawing of figwort to show protogyny.

Drawing of epilobium angustifolium to show protandry.

Nectaries—Drawings of petal of buttercup, stamens of wall-flower, stamens of violet, carpel of marsh marigold, style of coltsfoot; nectaries coloured blue throughout.

Fruits.

A specimen and explanatory diagram of each.

Dry Indehiscent.	Dry Dehiscent.	Succulent.
Nut—	Follicle—	Berry—
Hazel.	Marsh marigold.	Drawing of gooseberry.
Acorn.		
Achene—	Legume—	
Corn buttercup.	Sweet-pea.	
Yellow goat's beard.	Capsule—	Drupe—
Clematis.	Thlaspi arvense.	Drawing of peach.

Schizocarps—
Geranium and umbelliferæ.
Shepherd's purse.
Violet.
Porous Capsule—
Poppy.

SPURIOUS FRUITS.

Pome—Apple; Hip—Rose; Haw—Hawthorn, etc., etc.
Modes of Dehiscence of Fruits. Diagram of
Septicidal—specimen of datura.
Loculicidal— ,, ,, horse chestnut.
Septifragal— ,, ,, cruciferæ.

SEED.

Bean (*a*) with testa; (*b*) without testa.
Maize (*a*) with pericarp; (*b*) without pericarp.
Date cut through to show position of embryo.
Coffee ,, ,, ,, ,, ,, ,, ,,
Walnut to show cotyledons.

DISPERSION OF SEEDS.

1. *Wings.*—Scale attached to seed of pinus.
Wing attached to fruit of sycamore and ash.
Seed of Bignonia alba.
2. *Hairs.*—*E.g.*, silky hairs of seed of cotton and epilobium.
Pappus of compositæ (fruit).
Awns of clematis (fruit).
3. *Hooks.*—Bristles of geum.

GEOGRAPHY.

By MARGERY REID, B.Sc. (Lond.).

IT is a vexed question how far the study of geography should be looked upon as a training for the mind, or whether its primary function be not to supply material on which the trained mind may work. Aim in teaching.

This difficulty may be to some extent solved by dividing the geography teaching into two distinct branches— physical and general geography.

If this be not done it will be found that the general geography lesson is overloaded with a mass of explanations of physical phenomena.

Thus, in a general lesson on the climate of India, it detracts from the unity of the subject if the teacher is obliged to make a digression to explain the theory of barometric pressures, but, presupposing this scientific knowledge, references to the special application of it are within the bounds of the lesson.

The first course in physical geography should consist of lessons requiring only observation of phenomena with which the children are well acquainted. Physical geography.

In a town like Cheltenham, situated within walking distance of the source of the Thames, the subject of the watershed dividing the small streams flowing into the Severn from those Observation and experiment.

flowing into the Thames, forms a much better subject for observation and reasoning than the form and movements of the earth. Simple experiments also may be performed, but artificial conditions should as far as possible be avoided. Thus in a lesson on the principles of evaporation, the children may be made to observe the gradual drying of a cloth, but if heat artificially obtained be used to hasten the operation, the object-lesson loses the greater part of its value.

Style of written work.

At the beginning of this course the work should be almost entirely that of observation and simple reasoning, but it is well to insist from the very first that exercises either spoken or written should be good in form as well as in matter. The composition should be as terse as is compatible with clearness, though this applies rather to the description of experiments than observations, for in the case of an observation, if we are to minimise the danger of overlooking the true cause, all accidental circumstances must be carefully noted.

The difference between an observation and experiment should be carefully explained, and the children should be shown that whereas in an observation we have to listen to whatever Nature says, an experiment is a question so framed that Nature will answer "Yes" or "No," and that we must only ask one question at a time. Thus we may ask the question: "Is water-vapour lighter than air?" We boil water in a kettle and the visible cloud appears above the spout showing that the invisible vapour must have risen as it left the kettle. The question asked was "Does water-vapour rise through the air?" and the answer is "Yes". The

children should then write a description of the experiment with as close attention to form as though it were a proposition of Euclid.

Experiment. To prove that water-vapour is lighter than air.

Apparatus. A kettle containing water and a spirit lamp.

Method. Place kettle on spirit lamp, light lamp and boil the water.

Result. Water-vapour issues from the spout in an invisible form and becomes visible as a cloud some little distance above the level of the spout.

Deduction. That water-vapour is lighter than air.

Subject-matter of the earliest course in Physical Geography.

This course should include lessons on the following subjects:—

Subject-matter of early course in physical geography.

1. Clouds: introducing the foregoing experiment to show why they occur high up in the atmosphere and how they are produced.

2. Rain, snow, hail, etc.: the different conditions under which clouds discharge their moisture.

3. Winds, with only such simple facts about their causes as can be shown by the movements of air or draughts in a room. If tissue paper be cut into fine strips, and held at different points in a room in which is a fire, the draught towards the fire may be simply demonstrated and also the draught up the chimney.

4. The sea: its saltness, the rising and the falling of the tide and the fact that high tide is later by nearly an hour every day, also that some tides rise higher and

retire lower than others. (Causes of tides should not be touched upon till later.) Waves and their causes.

Definitions.

As this course proceeds the children should be exercised in the making of good definitions. It is a mistake to think that definitions must be given by the teacher. It is well to ask one child what she means by the word to be defined. Write the definition on the board, and then, by means of a series of questions to the children, criticise all those points which are superfluous in the definition given. Having eliminated all these, let the teacher take the definition as it now stands, and by giving examples of all the facts which come under it, show that it is probably a great deal too wide, and draw from the children gradually all the necessary limitations.

A definition so obtained will be easily remembered, and, as the children get practice in framing them, they will appreciate the meaning and neatness of a clear definition.

In the later part of this course the physical features of countries may be introduced, and the children should get clear conceptions and accurate definitions of terms commonly used in geography, such as mountains, valleys, plains, islands, capes, etc., and they should both be shown models and allowed themselves to make them.

The simpler facts concerning the work of rivers and other forces modifying the surface of the land will also find a place among these lessons.

The physical geography which should follow this preliminary work must of course be modified to suit the age and intelligence of the pupils.

Physical and chemical experiments may now be introduced, and the mathematical side of the subject will be more insisted upon as the children begin to learn algebra and geometry.

Later course in physical geography.

The illustrations also need no longer be drawn from the child's immediate surroundings, but may be the result of reading, or of description on the part of the teacher, and whereas in the lesson general laws are arrived at from special cases, in the home work the class should be encouraged to search for new cases illustrating the laws.

These later courses should be preceded by simple work on the physical and chemical properties of air and water. The form and movements of the earth should be treated of, and with the help of a tellurium most of the simple facts may be made clear, and the phenomena of the seasons and the varying length of day and night may be demonstrated. The nature of the proof of the earth's movement round the sun is appreciated by few, and the children should be encouraged to make for themselves some of the observations on which it is based.

Thus they might be expected to keep an account of the groups of stars seen due south every evening at a given hour. The change of constellations will stimulate their curiosity, and it will not be necessary to wait for the whole year before giving them some explanation. Or they might be asked to keep a register of the varying length of the shadow of a stick at noon for three months. The fact could then easily be drawn from the children that the sun is at some times higher in the heavens than at others, but they would almost certainly have to be helped to find out the reason.

The meaning and use of the various lines ordinarily drawn on a globe may now be given.

The atmosphere: pressure and temperature.

After this work on the earth as a planet, its gaseous envelope should next be studied, *i.e.*, the atmosphere, its composition, pressure and temperature, and the instruments used for measuring them. In an earlier course the instrument and its use will be enough to deal with; in a course to older pupils the construction and correction of the instruments may be considered.

The children might keep a chart of both temperature and pressure for a month, and at the end of that time be taught to find the average temperature for the month, and to understand the methods for showing variations of the barometer used in the leading daily papers. The nature of isobars and isotherms should also be explained, and the isobars for July and January should be filled into two maps and kept for use later. A map with isotherms filled in should also be given, and the children encouraged to find reasons for the curves in any given line.

Winds.

They will now be prepared to understand the laws treating of movements of the atmosphere. With younger classes only the more important winds should be taken, such as cyclones and anti-cyclones, land and sea breezes, trade and anti-trade winds and monsoons, whilst the older classes should be led to observe the local variations arising from peculiar circumstances.

When the principles are grasped, an exercise might be given to indicate with arrows the direction of the wind on the maps on which they have already marked the isobars.

The water envelope of the world will next demand attention, *i.e.*, the depth of the ocean and its deposits. This at first sight will appear to the children to be a subject about which they cannot possibly be expected to have any knowledge, but by a short recapitulation of the work of rivers treated in the preliminary course, the fact of the necessary existence of a continental shelf may be drawn from them, as also the fact that the breadth of this shelf will depend on the slope of the continent in the immediate neighbourhood of the coast, and on the amount of deposit made by rivers. Ocean depths.

A wall map contoured to show depths in the Atlantic should be shown to the class, and the instruments should be described used in investigating depth and nature of the deposits on the ocean floor. With an older class the nature of the evidence with regard to the belief in the permanence of ocean basins may be touched upon.

Saltness of sea and causes regulating it. Various seas should be compared with regard to their salinity.

The tides. Their causes; spring and neap tides; reason for high tide being fifty-four minutes later each day. The subject of the tidal wave as experienced in England requires careful treatment, as many text-books leave the impression on the minds of children that the tidal wave in the North Sea travels from east to west, and that the shores of the Baltic are experiencing low tide when the eastern coast of England is having a high tide. Tides.

Currents. Causes of currents should be sought in the movements of the atmosphere. The class should be asked to indicate on the map showing winds, which they drew to illustrate Currents.

a previous lesson, the effects of the trade and anti-trade winds in the production of currents. Attention must then be drawn to the way in which the position of the land modifies the currents so produced, and thus the class may gradually evolve a chart of the currents of the Atlantic. For an exercise they may be given a chart of the currents of the Pacific and asked for the causes of the direction of the currents.

Land. The teacher must then proceed to the more complex subject of the physical features of the land.

Mountains produced by folding; their position with regard to the ocean. Volcanoes and their distribution.

Hills produced by denudation.

Plains and valleys.

Rivers; their work and the various causes determining their volume, velocity and course.

Springs.

Islands.

Climate. Temperature and rainfall.

Distribution of plants and animals.

General geography. The order of treatment of the general geography of various countries does not vary, and consequently, notes of a first term's course will sufficiently indicate the lines of later work. Opinions differ as to whether it is better to begin with the study of a continent or a smaller division of land.

Lesson I. Before the actual course begins, the children should have a preliminary lesson on the making of plans and the use of scales. A plan of the schoolroom and of the immediate surroundings has now-a-

days generally been made by children whilst still in the Kindergarten, but if so, a little recapitulation will do no harm before a first lesson on the nature and meaning of a map.

The teacher's preparation should be done several weeks in advance, so that no point essential to a later lesson may be omitted in its proper place.

Lesson II. For the second lesson an outline map of the continent or country to be studied is given to the children with the lines of latitude and longitude. If the work has not already been done in a physical course, the meaning of latitude and longitude should be clearly explained. After having shown that the distance between the equator and either of the poles is divided into 90 degrees, a sphere may now be taken, and by rough measurement the two parallels corresponding to those through the top and bottom of the given map may be drawn upon it. After a short description of what we mean by longitude, the longitude of the given country is then indicated on the sphere, and the use of the two sets of lines to show exact position on the earth will be appreciated. If it be not a first course, the position of the given country may be compared with others equidistant from the equator, or on the same meridian.

Position of places on earth's surface.

In this lesson may also be introduced a few words about the temperature of the given country so far as it is dependent on latitude.

Lesson III. Height above sea level.

For this lesson the teacher should have drawn and painted for the class a map of the continent being studied, with contour lines marked in

Contouring.

two different colours or with two different kinds of lines. (Too great detail only tends to confuse the children.)

The first contour line should be drawn joining all places 500 feet above the sea level, and the second joining all those places 1500 feet above sea level. Each child should then be provided with one of these maps, and a wall map similarly contoured and also coloured should be hung on the wall.

The teacher then explains the nature of contour lines, and shows that if that part of the map between the 500 contour line and the sea be coloured green, the coloured part will represent all that part of the land which is less than 500 feet high, that is, generally speaking, the plains. That part between the 500 and 1500 contour lines is then coloured light brown, and all those areas enclosed within the 1500 contour line a darker brown. When the maps are coloured, and each child has her own, they may then be taught how to read a map so coloured. The teacher will draw from the class that if the contour lines come close together the ground slopes very rapidly, but that the slope is more gradual when the contour lines are more widely separated—that the greatest height of the land lies near the greater ocean, and that the more gradual slope is towards the smaller ocean, and that this allows of the development of larger but slower rivers than those flowing down the steeper slope.

A raised model may then be shown to the class, and this may be coloured in the same way as the maps, but the children must clearly understand the disadvantages of a model, and be shown that the vertical heights are

always enormously exaggerated in proportion to the horizontal distances.

In recapitulating, the children might be asked what they consider a common slope for the sides of mountains. Their notions will always be found to be extravagant, many of them thinking they have seen and even climbed slopes of 60 degrees and upwards. By placing a piece of india-rubber on the cover of a book, and gradually opening the book and sloping the cover till the india-rubber rolls off, the children may be shown how very small is the angle at which it is perfectly impossible for anything to rest on a slope, and that therefore if we find stones on the side of a hill we know that the slope cannot be greater than 30 degrees. Examples may be drawn from any hill in the neighbourhood of the school.

Lesson IV. A second lesson will be necessary on the contour of the given continent, when the names of the mountain ranges and of the plains may be given, short descriptions of them read, and exercise given in filling them into a blank map from memory.

Lesson V. The teacher fills into a wall map, blank and uncontoured, the principal rivers, and asks the class to put them in their contoured maps. Many of the children will be found not to have appreciated the meaning of contour lines, but will have drawn a river flowing from the part coloured green to that part coloured brown. One such map will form a good object-lesson, and the children can be brought to see the absurdity of what they have done in representing a river as flowing up a hill. Position of rivers.

The properly contoured wall map may then be

hung up, and the actual position of the rivers followed. The meaning of watershed will now be apparent, and the fact should be noted that it does not necessarily or even generally correspond with the highest land.

The varying velocity of the river should be drawn from the children from the nature and position of the contour lines, and from that, which parts of its course are being sculptured and in which parts deposition is taking place.

Lesson VI. If a physical course is given, the work of rivers will already have been treated, but certain rivers in the continent should be chosen for special description. From the contour line the children will be able to say for how great a distance the rivers are probably navigable, and the uses of the given rivers as a means of communication and the position of towns on their banks may be discussed.

Coast line.

Lesson VII. Coast line. Sufficient knowledge will now have been gained to render possible the appreciation of some of the causes affecting coast line.

When rocks are hard and folded, producing mountains, then they will also give rise to rocky promontories. Clays and sands, which inland allow themselves to be worn into plains and valleys, will here produce bays. Rivers, if still capable of erosion, will produce valleys, which a slight subsidence will convert into narrow gulfs. Finally the accessibility of various points on the coast may be considered, and the position of the chief harbours and ports.

Climate.

Lesson VIII. Climate. This lesson may be treated deductively, as the class is already familiar with those phenomena upon which both

temperature and rainfall are mainly dependent. The rainfall might be given as an exercise, allowing the use of contoured maps, and the chart of the prevailing winds.

Lesson IX. Distribution of vegetation, pastoral and agricultural districts.

Lesson X. Distribution of minerals, centres of population.

At the end of this course a physical map of some country not already studied by the children should be hung before them, and they should all be asked to write an essay about the country from the facts that they find in the map.

If they can do this, they will have learnt to read a map intelligently, and one of the great ends of a course in geography will have been attained, since they will not only have acquired many new facts, but have also gained the power of searching for and assimilating facts for themselves.

When England is the country being studied, this course must be supplemented by more detailed work on the causes that have determined the positions of cities and towns, and how these causes have operated during the last 2000 years. The children should be shown that British camps were generally on escarpments overlooking the surrounding country. The district round was cultivated, and the inhabitants sought safety in the camp in time of danger. After having been told that the position of some of these "duns" or hill forts is still indicated by such place-names as London, Dunstable and Dundee, the children might be encouraged to suggest other places themselves. The number of camps was greatly increased

by the Romans, many of the sites being marked by corruptions of the Latin word *castra*, as Chester, Colchester and Winchester, and these camps were joined by well-made roads.

Later immigrants formed their centres either in the neighbourhood of these roads, as the Saxons, who often formed villages at a point where the road crossed a stream, as Hertford and Stamford on the Ermine Street, or on sheltered bays and navigable streams, like the Norse and Danes, whose towns and villages, ending in "ley," "thorpe," "wic," are never found except where there is a spring or other natural water supply.

As the various races inhabiting England became amalgamated, and the land was cleared, there was a tendency for towns and villages to spring up over such districts as the Weald, the eastern counties, the central plain and broad river valleys. But there was no great concentration of population save in the south-east, where the neighbourhood of the continent called into existence the Cinque Ports, and where iron smelting was carried on by using the wood of the Wealden forests.

As the Cinque Ports declined, the growth of the navy and the increase of fisheries and trade with the continent increased the size of other ports, and the growing importance of the woollen trade called into existence the large Norfolk towns, which flourished until vexatious guild regulations induced many workers to leave the towns, and form industrial villages as Manchester, Birmingham and Sheffield. Settlements of foreigners, as the French silk weavers at Spital-fields, also formed a nucleus for other industries.

At this point the children might be shown a geological map of England, and also a map in which all those districts with a population of more than 500 to the square mile are coloured red; they would notice that almost all these red patches correspond with coal fields, and be told that the period of beginning to work many of these coal fields, corresponded with that at which America was being opened up; that consequently such ports as Liverpool and Bristol on the west coast became identified with the importing of cotton and sugar, and that towns engaged in these industries sprang up in the neighbourhood of these ports.

The use of steam power in various manufactures still further attracted the cotton and woollen industries to the towns of Lancashire and Yorkshire, and the working of iron, found in the neighbourhood of coal, accounts for many other centres of population.

Another map may now be shown with the various manufacturing towns marked, and attention called to the physical features which have caused the location of the industry at that spot, as the presence of water power, the possibility of water carriage, the neighbourhood of a port, the presence of hard water used in beer-making, as at Burton.

When the internal growth of England has been considered, a lesson should be given on her commercial supremacy, and the factors which have determined it. England's position in the centre of the great land hemisphere, the climate, the indented character of the coast, and the mineral wealth, should all be touched upon; nor in doing this should points not geographical

be omitted, is the needs of a continually increasing population, the founding of colonies by a part of this surplus population, and, above all, the character of the people upon which alone the greatness of an empire can rest.

PHYSICS.

By AGATHA LEONARD, B.Sc. (Lond.).

AS a preliminary to any remarks on the teaching of physics, it will be well to consider the place which the subject should hold in a general scheme of science teaching. It is not the most suitable subject for junior classes; for young children the sciences of botany and zoology which cultivate the observing faculty, while making less demand upon the reasoning powers, are preferable, but for children of thirteen or fourteen a course of elementary physics affords valuable training and arouses great interest. The subject must, of course, be treated on purely experimental and non-mathematical lines, indeed the chief value of physics at this stage is to teach the children the true use and nature of experiment. They will probably begin with the idea that the use of experiments in a lecture is somewhat the same as that of illustrations in a story-book, to render it more entertaining, though they might be dispensed with, and it takes time to make clear to them that experiment is the very groundwork of all science, the careful "questioning of nature" as to what effects follow upon certain causes. These lessons on physics will lay an excellent foundation for a course on physical geography, which may be taken for the next year's work.

Position of "physics" in scheme of science teaching.

With girls of fifteen or sixteen either a second course of physics, involving a knowledge of elementary mathematics, may be taken, or chemistry may be begun; while with older classes the choice of a subject will greatly depend on the nature of their previous work, and on the facilities for laboratory work in chemistry or physics. Physiology should not be taken with girls below sixteen; it is of less educational value than either of the subjects above-mentioned, the possibility of personal observation being less, and the whole as taught in schools too often a matter of memory rather than of observation or reasoning; if taught to elder girls it is rather for the practical advantage of the information imparted than for scientific training. Some such scheme of science teaching throughout a school as the following might therefore be suggested :—

Classes of average age 10 to 12	Botany or Zoology.
" " " 13 " 14	Elementary Physics.
" " " 14 " 15	Physical Geography.
" " " 15 " 16	Chemistry or Physics (Magnetism and Electricity or Heat and Light).
Senior Classes	Chemistry or Physics or Botany; Physiology and Hygiene (in addition to one of the above).

The first course of physics (see end of chapter) may deal with some of the chief forces of nature (gravity, cohesion, friction); the three states of matter and their properties, under which head would come lessons on atmospheric pressure; elementary ideas of work and energy; and the simple phenomena of sound and heat. The subject of light is better omitted until sufficient knowledge of geometry has been acquired to allow of

the laws of reflection and refraction, and the effect of prisms and lenses being rather more adequately dealt with than is possible at this stage. Magnetism and electricity also are better postponed until a later course.

No text-book should be given to the children, as their home-work in science should never take the form of learning from a book. Some teachers, to avoid this, let the children take notes, and attempt to reproduce the lesson, others give, either on the blackboard or by dictation, a clear summary which the pupils take down verbatim, but neither plan is satisfactory; the first leads to confusion and inaccuracy, as the children are not old enough to take good notes, while under the second all the work is done by the teacher. I have found it best to end each lesson by setting some questions, framed so as to bring out the chief points of the lesson, to be answered by the children in their own words. The answers must be carefully looked over and criticised at the next lesson, and a methodical account of experiments insisted on, specifying in order the object of the experiment, the apparatus employed, the method adopted, and the results obtained and conclusion drawn. Specially good passages may be read to the class, both as an encouragement to the writer, and as an example to the rest of what can be done by one of themselves; and special censure should be given to careless work, but great care must be taken to avoid confusing mere mistakes with "bad work"; the children should be made to feel that more value is attached to even faulty explanations or descriptions, which show that their minds have worked on the subject, than to the most perfect reproduction of the teacher's exact words.

Home-work.

Besides the advantage of securing that the pupils and not the teacher shall do the main part of the home-work, the teacher may gain most valuable hints from the errors of the children; they will be found often to arise from some misconception, the removal of which will suggest a quite fresh method of explanation; indeed a teacher will be unlikely to succeed in imparting clear scientific ideas to her pupils who is not on the watch for any indications of what ideas, right or wrong, they really have formed, and able therefore to see their difficulties from their point of view.

Definitions.

The only case in which knowledge may perhaps with advantage be cast into words not by the pupil alone but by the teacher, is that of a definition, the construction of a concise and accurate definition being in most cases beyond the child's unaided powers. Even here, however, the child should do as much as possible of the work herself, only it should be done in class with the teacher's help instead of at home alone. Thus, suppose the lesson to be on the three states of matter, it is better not to give a definition of each as the starting-point, and then go on to illustrate and explain the same, but to start from the undefined idea which every child possesses of a solid, a liquid, and a gas, and develop from it by degrees the precise definition. Suppose the class to suggest as definitions that substances in the solid state are "hard," in the liquid state "wet," and in the gaseous state "invisible," they will be much interested in having the imperfection of these definitions brought home to them by the help of the liquid metal mercury, which does not "wet" glass or porcelain, and of the visible gas chlorine, and in being led to find out the true distinctions

by observing the different behaviour of solids, liquids, and gases respectively when placed in vessels of differing shapes and sizes.

It must indeed be a fundamental principle throughout these lessons to tell as little as possible; not only should the children produce unaided reports of their work, but the reports should be of what they have themselves observed, not of what they have received on authority. The worthlessness of authoritative science teaching is very generally felt in these days, and some modern teachers are disposed to deny any value at all to science lectures for young children, asserting that *only* by experimental work carried out by themselves, with as little interference from the teacher as possible, can any really scientific ideas be communicated to them. The value of personal practical work I, of course, fully admit, but I am sure that really "scientific" training may also be given in a "lecture" lesson, by a teacher who knows her subject, and is skilful in the art of questioning, and in making her children tell her what they really do see in an experiment, instead of telling them what they ought to be seeing.

Science teaching not "authoritative".

That observation may thus be trained, it is of importance to secure that all experiments shown to young classes should "go". With older classes the occasional failure of an experiment may be no great matter, they are capable of understanding that the conditions of the experiment were not fulfilled and hence the failure, but with beginners in science it is very undesirable to produce the impression that when Nature is "questioned" she sometimes gives one answer and sometimes another. Experiments that cannot be

shown to the children should as a general rule not be described, though when any principle is thoroughly grasped and driven home by experiments performed before the class, there is no harm in mentioning as additional illustrations such phenomena as the falling of the mercury in a barometer tube on being carried up a mountain, or the impossibility of making good tea at high altitudes owing to the lowering of the boiling-point of water; but should the want of apparatus prevent an experiment otherwise suitable for a lecture from being performed it is generally better with beginners to omit all mention of it.

Apparatus for elementary course.

For carrying out such a course as that now being considered very simple and inexpensive apparatus is for the most part needed. The only expensive piece really necessary is an air-pump; for the rest, an ordinary pair of scales, a few glass beakers, flasks and funnels, some glass tubing and rods, a little mercury, some wire gauze, some sheet india-rubber, thermometers, a Bunsen burner, and a retort stand or two, are all that is needed, though the addition of such pieces of apparatus as the Magdeburg hemispheres will enable interesting experiments to be shown.

Practical work.

As regards the children's own practical work it is not always possible to arrange in schools for laboratory work for beginners; the time at disposal is often insufficient, and the class too large for a single teacher to give the supervision needed by children so young; but where the class can be taken in sections of not more than ten or twelve pupils for an extra lesson, nothing so greatly rouses the children's interest and gives so real a

grasp of principles as a course of simple experimental work carried out by themselves. Accuracy must be insisted upon from the very beginning ; each experiment must have a definite object, and a description of the experiment with the results obtained must always be written out by the child. It is a good plan to give as many experiments as possible in which the result aimed at is quantitative, it is a great satisfaction to a child to obtain a result whose correctness can be gauged, but it is not necessary that the work should be exclusively of this type. The course may begin with the careful measurement of lengths, employing different methods, such as the direct application of the rule to the object, the transference of distances by means of compasses, and obtaining the lengths of curves by means of a string laid along them and afterwards measured ; and the children should be taught to make measurements on the metrical system as well as in feet and inches, especially if they already possess any knowledge of decimals. When they can measure as accurately as their scales will allow, the vernier may be introduced, its principle explained by the aid of a large-sized model, and practice given in reading the verniers on barometer scales, etc. Then may follow measurement of the area of rectangles, and, if the children's mathematical knowledge allow of it, of triangles and other rectilineal figures, then the determination of the volume of rectangular solids from their linear dimensions. The determination of mass may next be taken up, and the pupils taught how to use a balance properly, the C.G.S. unit being again employed as well as the pound ; then they may learn how to weigh in water, and how

to prove experimentally that the loss of weight of a body weighed in water is equal to the weight of the displaced water; then the volume of a body may be determined by finding the mass and hence the volume of the water it displaces; from this they pass readily to the determination of specific gravities. Experiments on air pressure may follow; the children may learn to read the height of the barometer, and to make for themselves barometric charts showing the variation of the height from day to day; this affords a good opportunity of teaching them to use squared paper. There are also many simple experiments in mechanics, such as the experimental determination of the principle of the lever, the finding of the position of the centre of gravity of a lamina, the finding of the resultant of two parallel forces, etc., very suitable for such a class. Then may come easy experiments and measurements in heat, the reading of various thermometer scales, the filling of a thermometer and its rough graduation, and experiments proving the fact of expansion and of the force exerted by expanding or contracting bodies; measurements of the amount of expansion are too difficult for this stage. Much supervision is required; special care should be taken that children are not left with unoccupied intervals during which they get listless and bored; this requires careful previous planning out of sufficient experiments for the whole class. It will stimulate interest if several children in succession are allowed to make the same measurement, and then to compare their results.

Even where no laboratory class is taken, the teacher can still take opportunities of convincing the children

that experiments can be performed by themselves as well as by their class-teacher; they enjoy being called up to perform an experiment in class, and will, if they have any taste for the subject, take an interest in repeating any possible ones at home; they can convince themselves of air-pressure by private experiment with syringes, siphons, and inverted tumblers, or can find centres of gravity, or experiment with sounding strings of various lengths, but of course such desultory experiments, followed by no careful writing out of results, do not give very valuable training in scientific accuracy.

Diagrams.

I would insist also on the importance of requiring children from the first to illustrate their work by diagrams; a little time is well spent in criticising these, and in showing how they might be improved. Very neat and serviceable diagrams may be produced even by children with no natural taste for drawing, but they need to be shown how to work, and perhaps to have the lines of a diagram suggested to them at first by a rough blackboard sketch, or it may not occur to them that a few simple lines will show all that is necessary better than a would-be realistic sketch of apparatus, with impossible perspective and smudgy shading.

Course of electricity and magnetism.

I pass on now to somewhat higher classes. With pupils whose average age is about fifteen, some one or two of the branches of physics may be taken more in detail. Suppose electricity and magnetism to be chosen, the aim throughout the course should be so to impart elementary ideas that they may be a real help and not a hindrance to any future effort to take in modern views

of electricity. To this end attention should from the very first be directed to the electric or magnetic "field" about any charged or magnetised body and not exclusively concentrated upon that body itself, and the pupils should be accustomed to attribute the motions in such fields not to the "action at a distance" of a charge, a pole, or a wire carrying a current, but to the special condition of the medium immediately around the moving body. The idea of a magnetic field is more readily grasped by beginners than the corresponding idea in electrostatics, owing to the ease with which the field may be mapped to the eye by means of iron filings, or by marking down successive positions of a tiny magnetic needle; it seems to me, therefore, well to begin with the study of magnetism, rather than, as is common in text-books, with that of statical electricity. From magnetism the more natural transition is to current electricity, and it will be found a good plan to take the subjects in this order, passing from the magnetic fields which surround permanent steel magnets to those which are found to exist in the neighbourhood of a wire whose ends have been joined to plates of zinc and copper immersed in a vessel of dilute acid. The existence of such fields will be proved by the magnetisation of iron round which the wire is coiled, and by the motion of permanent magnets near which it is held, and the direction of the lines of force will be inferred from the direction of such motion. The existence of the magnetic field established, the term "current of electricity" may be introduced; the children will readily understand that it arose from the idea that it was something flowing through the wire which gave it such strange properties, and that whether

this is the case or not, there is a practical convenience in retaining the old terms.

Some of the practical applications of the magnetic effects of currents may now be explained, *e.g.*, the electric telegraph and electric bells, and the use of a galvanometer as a current indicator. Simple experiments on the induction of currents by motion of magnets, or starting and stopping of currents may follow, it being carefully pointed out that the one essential for such induction in a coil is some change in the magnetic field in which it lies. The principle of dynamos readily follows. The heating and decomposing effects of electric currents may next be considered with their practical applications to electric lighting, and electro-plating respectively, and the attention of the children should be directed to the energy appearing as heat or as chemical separation in the two cases. If they have gone through the preliminary course they will know enough of the conservation of energy to look for the disappearance of energy in some other form, and the chemical action in the battery may now be pointed out. Some explanation of "polarisation" and of the need for more complicated forms of battery than the simple voltaic cell may be given.

Lessons on statical electricity will end the course; they may be connected with the preceding lessons by first speaking of the discharge of a Leyden jar, and that between the knobs of an induction machine as instantaneous "currents," and going on to the state of affairs in the medium between the knobs or coatings when they are not sufficiently near for the discharge to take place; this will be made clear by going back to

earliest facts known about electricity and following the ordinary course of electrostatic experiments.

Heat and light.

Should "heat and light" be chosen instead of electricity for this year's course, the mode of treating the subject must depend very much on the mathematical advancement of the pupils. It is probable that their knowledge will not exceed the first two books of Euclid, and algebra to simple equations, and it will therefore not carry them very far in the treatment of geometrical optics; it will enable the laws of reflection to be intelligibly explained, and the position of the image in a plane mirror to be determined (the law of refraction may also be made clear, as the children can easily be made to understand the meaning of the term "sine"), but formulæ connected with mirrors and lenses should be left to a later stage, the changes in size and position of the image formed by a curved mirror or a lens being determined experimentally and not by calculation. A general explanation of the action of optical instruments, telescope, microscope, spectacles, etc., can be given, without exact calculations, and illustrated either by carefully drawn diagrams, or by models with lenses of cardboard and rays represented by strings. The interest of lectures on dispersion and the spectrum is greatly increased if they can be illustrated by lantern experiments. The subject of heat lends itself better to non-mathematical treatment, and is specially good for practical work by the pupils themselves.

Work of senior classes. Independent reading.

The work of senior classes, *i.e.*, girls of seventeen or over, depends so much upon circumstances, such as their previous training, their mathematical knowledge, etc., that it is difficult to say much to the point about it, but a

word may be added on a very common fault of such classes, a tendency to rely too much on their teacher and their notes of lectures, and to read and think too little for themselves. The practical work, which is an essential for such classes, does much to encourage self-reliance, but besides this they should from time to time be given some reading to do on points which have not been previously made clear in lectures; difficulties met with in the reading should be brought up at the next lesson, when the teacher will either solve them or put the pupil in the way of doing so for herself. This kind of work takes time, and is therefore apt to be crowded out from a full time-table, but it is worth an effort to find a place for it.

LIST OF SOME BOOKS USEFUL FOR TEACHERS.

I. Practical Physics.

For Beginners—

Inductive Physical Science. F. H. Bailey. Heath & Co., Boston, U.S.A.
Practical Lessons in Physical Measurement. A. Earl. Macmillan. 5/-.
Exercise Book of Elementary Practical Physics. Arranged according to Head Masters' Association Syllabus. R. A. Gregory. Macmillan.

For rather older Classes—

Elementary Physics. Henderson. Longmans, Green & Co.
Elementary Practical Physics. W. Watson. Longmans, Green & Co.
Intermediate Course of Practical Physics. Schuster & Lees. Macmillan.

For Senior Classes—

Practical Physics. Stewart & Gee. Macmillan.
Practical Physics. Glazebrook & Shaw. Longmans, Green & Co. 7/6.

II. Theoretical Physics.

Primer of Physics. Balfour Stewart. Macmillan. 1/-. (May suggest a course for beginners.)
Heat. H. G. Madan. Longmans. 9/-. (A good course for junior classes.)
Elementary Treatise on Heat. Garnett. Deighton, Bell & Co. 4/6. (A good course for rather more advanced students.)

Light. A course on Experimental Optics. Lewis Wright. Macmillan. (Suggests good experiments, especially with lantern.)

Elementary Lessons in Electricity and Magnetism. S. P. Thompson. Macmillan.

For Senior Classes—

Theory of Light. Preston. Macmillan. 15/-.

Theory of Heat. Preston. Macmillan. 17/-.

Electricity and Magnetism. Foster & Atkinson. (Based on Joubert.) Longmans, Green & Co. 7/6.

Theory of Heat. Clerk Maxwell. Longmans, Green & Co. 4/6.

COURSE OF ELEMENTARY PHYSICS.

Definition of Physics.

Distinction between physical and chemical phenomena.—Iron heated, Iron rusted. Candle melted, Candle burnt, etc., etc.

Motion. Force. Illustrations of familiar forces.—Muscular force. Force of stretched spring, etc., etc.

Consideration of some particular forces.—Gravity. Friction. Cohesion.

Gravity.—Distinction between body's weight and mass. Weight is the earth's pull upon it. Might be different while body unaltered. Centre of gravity. Experimental determination for laminæ of various shapes. Stable, unstable and neutral equilibrium dependent on position of centre of gravity Everyday illustrations. Stick balanced on finger, etc.

Friction.—Everyday instances. Effect if it were removed.

Cohesion.—Three states of matter. Solids. Liquids. Gases. Essential difference between them. Experiments showing retention of size and shape by solids, of size by liquids, of neither by gases.

Pressure of Liquids—

Transmitted in all directions. Effect of boring hole in side of vessel containing a liquid.

Pressure increases with depth.—Experiment. Lower into jar of water cylinder closed at bottom by glass disc, the pressure of the water supports the disc. Pour water into cylinder till bottom falls, the lower the cylinder is sunk, the more water is required for this.

Liquids find their level.—Experiment with communicating vessels of different sizes. Water level, spirit level. Water from reservoirs rising to tops of houses. Exception in case of very narrow tubes. Capillarity.

Floating power, or buoyancy of liquids.—Experiments on weight of water displaced by bodies immersed and by floating bodies. Principle of Archimedes.

Specific gravity.—Definition. Experimental determination (1) by catching and weighing displaced water; (2) by loss of weight in water.

Pressure of Air—

Experiments showing existence of atmospheric pressure [*e.g.*, inverted jar of water, experiments with air-pump, suckers].

Barometer.—Construct by filling long tube with mercury. Show by passing barometer tube through cork of receiver that mercury falls when air withdrawn from above mercury in cistern, rises if air is let in.

Action of syringes. Pumps. Construction and working of air-pump.

Heat—

Temperature or hotness.—Sensation not reliable guide.

Expansion.—Experiments to show in solids, liquids, gases. A few exceptions to law of expansion, *e.g.*, water near freezing-point, ice forms on top of water. Force of expansion.

Thermometers.—Construction and graduation.

Fusion.—Temperature remains constant during fusion. Latent heat.

Evaporation and boiling.—Latent heat of vaporisation.

Boiling point depends on pressure.—Experiment of boiling water under air-pump.

Conduction.

Convection.—Heating of water in kettle; heating of houses by hot water.

Sound—

Sounding bodies always in vibration.—Bells, tuning-forks, metal plates (vibrations shown by means of sand), strings, etc.

Mode of propagation. Illustrations. Air or other medium necessary for transmission; no sound through vacuum.

Sounds differ in loudness, pitch, quality.

Physical cause of loudness.—Violence of vibration.

Physical cause of pitch.—Rapidity of vibration. Siren, or perforated disc.

Strings.—Note given depends on length, thickness, tension and material. Experiments with monochord. Illustrate by violin strings.

Harmonics.—Subdivision of strings. Experiment with riders on string.

Physical cause of "quality".—Intermixture of other notes with fundamental.

Resonance.—Experiments with tubes of air and tuning-forks. Organ pipes.

Velocity of sound.—How first determined. Calculate distance of thunderstorm.

Reflection.—Echoes.

Work and Energy—

Work done when force overcome or yielded to through any distance.

Gravity does work when body falls.—Work done against gravity in lifting a body. Foot-pound, unit of work.

A body which has power to do work has "energy".—May have in consequence of motion, or of position, or of being heated, etc., etc.

Conservation of energy.—Transformation of energy.

THE TEACHING OF CHEMISTRY.

By CLARE DE BRERETON EVANS, D.Sc. (Lond.).

THE committee appointed by the British Association in 1889 to inquire into the "Present Methods of Teaching Chemistry," gave it as their opinion that "the high educational value of instruction in physical science has never been exhibited to its full advantage in most of our educational institutions," and it will be admitted by the majority of those who interest themselves in the teaching of chemistry in girls' schools that in spite of the growing tendency towards more rational methods of imparting the subject, the progress made in this direction during the last eight years has not been great enough to warrant any change in the above dictum.

After all that has been said and written about the difference between instruction and education, it should be unnecessary to reiterate that the object of our schools is not so much to develop the memories of the children as their capabilities, their powers of reasoning and doing, and although the attainment of this object is brought about chiefly no doubt by the *method* of teaching, it is also dependent upon the subject taught.

Natural science is specially valuable in calling into action at once the logical and practical faculties, training simultaneously the mind, the eye and the hand;

but it is necessary in order to avoid teaching the subject dogmatically to make the course progressive—to pre-face lessons in chemistry, for example, by a preliminary ground-work of physics sufficient to render the chemistry intelligible. Elementary physics is the logical sequence of arithmetic, and may be taken up with the greatest advantage as soon as the four simple rules of arithmetic have been mastered: moreover the practical application of these rules afforded by simple measurements of length, area and volume is of immense use, not only because each pupil verifies for herself in this way the rules she has learnt to apply on paper, but also because arithmetic is thus shown to be of practical and not merely theoretical value. If children were taught from the beginning to make practical use of their arithmetic one of the greatest difficulties with which the science teacher has to contend later on would be obviated, that namely of explaining the application of mathematics to the solution of simple chemical and physical problems.

Elementary physical science as a basis for chemistry teaching.

Chemistry again is the logical outcome of physics, and should not be attempted, because it cannot possibly be understood, until the fundamental principles of physics have been mastered. It cannot be too strongly insisted upon that chemistry should be preceded by elementary physics; the sequence, practical arithmetic, elementary physics, chemistry, being the only one which affords a satisfactory progressive scientific course suitable for being carried on throughout a school starting where the object-lessons of the kindergarten end; then by the time examination classes are reached there need be left none of those gaps in the understanding of the

pupils, gaps with regard to elementary principles, which are so usual as to be looked for as a matter of course by the chemistry teacher, and which she is obliged to span here and there by dogmatic assertions on which rests as a rule all the physico-chemical knowledge required of the examination student. A well-arranged course of this kind, moreover, possesses the great advantage over others, botany or geology for example, that it may be made free from technical language, a point of considerable importance, not only because the tax upon the memories of the children is thus lightened, but because they are at liberty to express their observations in their own words. It has been truly said that "strange words are non-conductors," and it is unreasonable to suppose that clear ideas on any subject may be imparted in a language which is only partially intelligible.

Educational advantages of a progressive chemistry course.

It is necessary of course to begin early if a sound basis of physics is to be laid for the teaching of chemistry; the elementary physics lessons should in fact be made to continue the work of the kindergarten without any break, thus carrying out the aim of natural science teaching, which should be to foster the powers of observation and research which almost all young children possess to a very high degree; nor are these the only faculties which benefit, since physical science is specially fitted also to develop independence of thought, agility of mind and hand and soundness of judgment; the simplest experiment may be varied in a hundred ways to produce the same result, and it is this possibility of variation which gives the individual pupil so much

Need for early training in science.

opportunity for the exercise of originality, which cultivates quickness of observation and encourages so largely the valuable quality of self-reliance.

"Practical" teaching.

It is evident that a course of lectures unaccompanied by laboratory work gives no scope for the educational possibilities of technical subjects such as those with which we are dealing; the teaching must be made "practical". It is not sufficient that the teacher should perform a number of illustrative experiments at her lectures, for it is rare to find a child capable of grasping the meaning of such illustrations; it is not even sufficient that the experiments shown by the lecturer should be repeated subsequently by the pupils themselves; this is no doubt good as far as it goes, for it breeds familiarity with apparatus and gives practice in manipulation, but that is all; as to educating the particular faculties which science is specially adapted to educate it is useless, for the results of the experiments being already known the reasoning powers are not required; on the contrary the performance of the experiment on the lecture-table has led to the belief that there is one stereotyped method of doing it, and consequently the child's memory alone is exercised in trying to remember every detail of the apparatus used and the method of carrying it out.

For success in examinations it is now necessary to have a certain amount of practical knowledge of chemistry, and examination classes are therefore given some practical training, but this reform still remains to be extended universally to the junior classes, which need even more than the senior ones that the teaching should be objective: a child may learn and repeat correctly a

dozen times that water is composed of oxygen and hydrogen, and the thirteenth time she will assure you that its constituents are oxygen and nitrogen; but let her make the gases for herself, test them and get to know them as individuals, and mistakes of this kind will become impossible.

A further reason for giving practical instruction to juniors is that examination students are generally pressed for time, being on this account often obliged to do the necessary laboratory work out of school hours; moreover they find it difficult as it is of a kind to which they are unaccustomed. It would obviously be a great advantage to train the children from the beginning in the use of apparatus during the years when such work is a recreation and a real delight to them.

A central idea in science teaching.

There is one other point to be noticed. The science course may be begun early and continued without intermission throughout the school career, the teaching being of a sufficiently "practical" character, but the result will not be a success unless there is a central idea running through it. From the very beginning the experiments must be chosen in illustration and explanation of the fundamental physical laws which may thus be made perfectly familiar to the pupils. It is necessary, however, that these experiments should be of the simplest character; to quote the words of the British Association report above referred to, "the lessons ought to have reference to subjects which can be readily understood by children, and illustrations should be selected from objects and operations that are familiar to them in everyday life".

Briefly then, I would recommend that the following broad principles should be adopted with pre-examination classes :—

Broad principles recommended.

(1) The course of elementary physical science which is then ecessary foundation for a sound knowledge of chemistry should be made continuous with the object-lessons of the kindergarten, and should form a progressive course extending over three or four years, passing imperceptibly into elementary chemistry.

(1) Elementary physical training to be made continuous with kindergarten teaching.

(2) This course should be of an *entirely practical* character and should be carried out in a room very simply equipped for the purpose. No text-books should be allowed and no notes dictated by the teacher, but each pupil should subsequently to the lesson write out in her own words an account of her own experiments, of which she is encouraged to take notes at the time of doing them.

(2) The elementary course to be entirely "practical".

Although all formal lessons on the simple subjects of investigation serve only to prejudice the minds of the children, lectures given at rare intervals on kindred subjects and profusely illustrated serve as a healthy stimulus to the youthful appetite for experiment and research.

Advantage of occasional lectures.

(3) The practical course should be so chosen that each experiment illustrates in the simplest possible manner some fundamental principle or "law" of nature. It is precisely here that a teacher has the opportunity of educating the logical faculties of the pupils, each of whom is required to solve independently the simple problem set before her at the

(3) Choice of experiments.

lesson and is thus placed in a position to deduce for herself from her own experiment the principle involved. The children are in fact placed, as Dr. Armstrong recommends, "in the attitude of discoverers," and it is astonishing how soon they learn to become independent in their methods of attacking new problems if their minds are not prejudiced by preconceived ideas of the results to be expected.

(4) As regards the size of the classes and the time to be allowed for each, the Committee of the British Association recommends that "a teacher should not be required to give practical instruction to more than from fifteen to twenty pupils at one time, although the classes at lectures and demonstrations might be somewhat larger". For the course indicated below one hour a week may be made sufficient at first, but later on an hour and a half should be allowed for each practical class.

(4) Size of classes.

(5) As to accommodation, it is quite possible, at any rate at first, to use an ordinary class-room, but as environment no doubt does exercise a certain influence the use of a special room very simply equipped with long tables supplied with water and gas is strongly advised.[1]

(5) Accommodation.

The above recommendations are meant to apply to all classes up to the time when the needs of public examinations demand a special course; this must necessarily be given by means of set lectures, as it could not otherwise be covered in the limited time which is

[1] Full details of fittings and of the very simple and inexpensive apparatus required are given in the syllabus issued by the Incorporated Association of Head Masters, which can be obtained at the "Educational Supply Association," 42 Holborn Viaduct.

generally allotted to the subject; they are more or less in accordance with those drawn up by Dr. Armstrong for the Committee of the British Association of which mention has been made, and which were embodied in the Syllabus of Physics and Chemistry issued by the Incorporated Association of Head Masters in 1895; since this date they have been successfully carried out in various boys' schools. Owing to the enterprise of Miss L. E. Walter a similar course was introduced at an even earlier date into the Central Foundation School for Girls, where it is now in operation. Appended is a very brief outline of the course there pursued, together with a typical set of lessons in chemistry.

Outline of a science course now in operation.

On leaving the kindergarten the science teaching is confined to what is really practical arithmetic and geometry, elementary measurements being performed by the most ordinary methods. The children are thus accustomed to the use of simple apparatus such as pipettes, burettes, etc., also to the use of the balance, the simple numerical calculations involved in weighing and measuring being performed in both the English and decimal systems, which are thus made quite familiar.

The following example, quoted from Miss Walter's paper,[1] gives a clear idea of the sort of introductory teaching needed. This lesson, although of the simplest character, had for its object to show the necessity for, and to choose a unit of length. This is how it was done: "I gave each girl but one a piece of string, all the pieces being the same length; the one odd girl I

[1] "The Teaching of Science in Girls' Schools," by L. Edna Walter, B.Sc., reprinted from *Education, Secondary and Technical.*

kept by me, and *we* had a *ball* of string. I asked the children to tell me how long their pieces were so that I could cut a similar piece. Naturally they began by guessing—a yard, half a yard; but as I had no yard-stick, I feigned ignorance of what a yard was. Soon one put the string along her slate and expressed the length as a slate and three-quarters. Every one else followed suit. . . . After each of the sensible measurements which they made . . . I did the same to my small comrade as they had done to themselves and cut off a piece of string. Then they all watched with great interest to see if my piece really did come like theirs. . . . This lesson may not sound very exciting, but during the whole time *each of those children was alive*, each was thoroughly interested in what she was doing."

The preliminary course consists in its earlier stages of exercises in the measurement of length, area and volume with the use of the balance; this is followed by experiments on density, and subsequently some work on heat is done, a simple thermometer and barometer being made and graduated by each girl, who is encouraged to use them to record the weather by means of curves showing variations of temperature and pressure. It may have been completed by girls of about fourteen, who will then be quite prepared to begin chemistry, having by that time gained a very good idea of how to apply their arithmetic as well as their knowledge of the fundamental physical principles to the solution of practical problems.

It is important to point out that the system here advocated inverts the usual order of teaching chemistry. This subject is divided into "pure" and "physical," and it is usual at the present time to begin by teaching

"pure" chemistry, that is to say, the preparations and properties of a number of the commoner elements and compounds, this part being considered easier than "physical" chemistry, which however ought logically to precede it, since it treats of the fundamental laws upon which "pure" chemistry depends.

A knowledge of simple physical chemistry is now required for all chemistry examinations, candidates for which are expected to have a working acquaintance with simple physical apparatus, to be familiar with the barometer and thermometer, the effects of heat on solids, liquids and gases, density and specific heat, etc., etc.; they are liable moreover to be asked to solve any simple problems on measurement. Now by giving precedence to "physical" chemistry, all this is done and done thoroughly before examinations are thought of, so that what is generally regarded by pupils at the present time as the most difficult portion of their subject is made by this means its A B C, and the time spent upon actual examination work can be considerably curtailed.

"Pure" chemistry is introduced by the study of the methods of testing all kinds of substances so as to be able to classify them roughly as mineral or vegetable, organic or inorganic, etc. The chemistry course suggested by Dr. Armstrong and adopted by the Incorporated Association of Head Masters is strongly to be recommended, as it is drawn up particularly with a view to imparting "not only information but chiefly a knowledge of method". It opens with "studies of the effect of heat on things in general; of their behaviour when burnt," and goes on to the investigation of such familiar things as air and nitrogen, combustion

and oxygen, hydrogen and water. Formulæ and equations are rigidly excluded, the aim being to give a broad introduction to the subject; on the other hand quantitative experiments form a much larger part of the curriculum than is usually the case, the previous training in physical methods having prepared the way for teaching chemistry in a more exact manner than is generally possible with beginners.

A girl who has gone through the scientific training outlined in the preceding pages will possess an elementary knowledge of many subjects; she will find little difficulty in mastering the information required for the London Matriculation or any other preliminary examination in physical science, the greater portion of the ground both in physics and chemistry having already been covered during the preliminary course indicated. It is certain that students who have undergone such a systematic education without hurry and without pressure, and with opportunities for reasoning out each step for themselves, will be in a condition to derive the maximum of benefit from subsequent instruction not only in chemistry but in all other branches of knowledge.

Typical Lessons in Chemistry.

At the beginning of the lesson the problem to be solved is announced by the teacher, who invites suggestions as to how it should be attacked. A scheme of work is thus prepared which is carried into practice by the pupils; every detail of manipulation is performed by the girls themselves, who select their own apparatus, bend their own tubing, etc., referring only occasionally to the teacher for help.

The scheme is elaborated as the investigation proceeds so as to form a piece of consecutive reasoning which may extend over a series of lessons.

Problem. To discover the constitution of chalk.

Typical lesson.

Being familiar with simple methods of testing unknown substances, heat and the action of acid are at once suggested by the pupils as a means of investigation, and a preliminary examination is made showing that heat does alter chalk in some way, whereas the addition of acid causes the liberation of a gas. The next step is to find out whether the chalk loses or gains anything by being heated ; also to determine the nature of the gas given off under the influence of acid.

Suggestions are again received from the girls, who are led to decide that the first part of the question may be answered by submitting a weighed quantity of chalk to a moderately high temperature, weighing at intervals until the weight, if it changes at all, again becomes constant.

They proceed therefore to weigh their empty crucibles with the usual precautions and then to reweigh them after having put in some dry chalk. The numbers obtained are carefully entered in the laboratory notebook with which each girl is provided. The crucibles are then placed in a "muffle" furnace, which the pupils are taught to manage for themselves, and are only withdrawn at the end of the lesson and placed in desiccators to be reweighed at the beginning of the next lesson, when they will be again submitted to the same treatment until the weight is constant.

While the crucibles are being heated preparations are made for finding out the action of acid on chalk ;

the pupils are led to suggest a simple form of apparatus for measuring the volume and weight of the gas given off, and hence for determining its density. By the time this is done the hour and a half allowed for the lesson will probably have expired. At the next lesson, after a preliminary questioning as to what each pupil has done and is going to do, the apparatus decided upon at the previous lesson is carefully prepared; subsequently the actual experiments to determine the quantity of gas given off are performed and its density determined, and finally it is shown that the gas given off from chalk under the action of heat is identical with that released by acid, chalk being composed of this gas and the residue left after heating it in a muffle furnace until the weight is constant.

It will be seen that this work involves a considerable amount of weighing and calculation, but this is rendered easy by the previous grounding in elementary physics, and a series of experiments such as that described may be carried out intelligently by any properly trained class of girls.

PART IV. ÆSTHETICS.

ART.

By Dorothea Beale.

THIS part is one of great and perhaps increasing importance owing to the development of musical education and of art and technical schools.

Music. The power of music over the emotional life has ever been felt; in many ways it is opposed to thought, if we regard it from the standpoint of the listener, who yields himself up to its influence; on the other hand, the performer, and still more the composer, can bring to bear on the subject high intellectual gifts, and it may have a great educational value. It is of the utmost importance, that in this as in all æsthetics, a taste be cultivated for all that is true and pure and lovely; not for low and false and sensuous music such as Browning has described in the "Toccata of Galuppi," but for the thoughtful, the devotional, as given in the two companion poems, "Hughes of Saxe Gotha" and "Abt Vogler"; and the learner should feel that she is studying to express right feelings, as Mme. Schumann and Jenny Lind insisted, not to show off her execution and make a display. It is greatly to be regretted that the general education is often stopped in order to specialise in music and art, before the mental equilibrium is fully established; if, besides this, there is an uprooting from one's home and country, at the most impression-

able and excitable period of life, much danger is incurred.

Music is not only a powerful means of expression and of promoting sympathy, it also draws people together for healthy recreation; especially valuable for this purpose are orchestral and choral classes. The power of the artist in music is far better understood than it was fifty years ago. I remember Dr. Kinkel, the German poet, saying to me about the year 1860, "the English will become a musical people, they are learning". We owe much to Mr. Hullah for this, and to the Tonic-Sol-fa system. I subjoin a paper by a most able teacher of the piano, one on the violin, two papers on singing and one on voice production and elocution.

We are beginning now to study art in connection with the history and literature of different periods and countries. In another section I have touched on art in connection with history. We all know how great has been in all ages the power of art in expressing and forming religious ideas; we cannot but see that Fra Angelico and Dante interpret one another. There is not space here to dwell on the subject; the writings of Ruskin and Browning and the works of the Pre-Raphaelite brotherhood have helped this generation to feel all that art may be in our life. The educative power of great paintings has been practically recognised by those who have gathered together great pictures in East London—the Art for Schools Association recognises its importance; by visits to galleries, by good reproductions, and occasional lectures, children should if possible have their eyes opened to see what are the higher teachings

Art historical.

which painters and sculptors and architects have expressed in their works; those who have heard Miss Harrison's lectures know how the statues, vases, friezes, etc., of old times help us to make these live again for us; especially valuable is what those of our own time have given us, for these utter what is most intrinsic in our life. England is richer for such pictures as "The Light of the World".

Mr. Thring used to insist much on schools being as beautiful as possible, and that painted windows and all the surroundings should help in the great work of education, the fulfilling of the human nature with the sense of the spiritual underlying realities; it should be the earnest endeavour of all educators to make, as Herbart has done, æsthetics in its widest sense, a help in ethics, and to consecrate and enrich the experiences and the teachings which come to us through sense.

Drawing. Drawing as a mode of expression is a really necessary subject; it is a form of writing; and modelling is another form of effective expression. In their higher aspects these arts are ennobling, cultivating the taste and leading up to the ideal. "Once," writes Dr. Harris, "trained to recognise the beautiful and graceful, the pupil has acquired a quality of mind useful in every occupation and every station."

Painting. There is an admirable paper by Mr. Cooke, "The A B C of Drawing," in the volume of Reports just issued from the Education Office. All who have heard Mr. Cooke lecture, must recognise that he has a real genius for teaching. In schools we have to do chiefly with cultivating the power of seeing things as they are, and expressing what we see. The

copying with the pencil of the Greek sculptures has been of much educational value, but enough importance has not been attached to modelling. I add an excellent paper on the subject.

Technical schools are so much the fashion of the day, that I may perhaps add something more on the subject of manual training. All students of Pestalozzi and Frobël knew the great educational value of manual work, but the general public, though they knew that mind acted on muscle, did not realise the fact that muscle reacted on mind; when this was recognised, many educational thinkers saw the importance of giving to hand arts a more prominent place in school work. A great reaction set in against mere book learning, and as I venture to think an exaggerated and indiscriminating value was by some attached to manual work. The enthusiasm of Herr Salomon brought to the front the use of Sloyd. Political circumstances and the need of competing with foreign countries have contributed to give a great impulse to education in art, and to develop and improve the training which had never been altogether neglected in girls' schools.

Other technical arts.

I subjoin papers on various hand arts, including one on Sloyd.

At a meeting held at Washington in 1889, the matter was brought before the department of Superintendence, and a volume was issued from the Bureau of Education which contains a very full account of the proceedings; it includes an admirable paper of about twenty pages by Dr. Harris, Chief Commissioner of Education, from which I make some extracts. The matter is considered in reference to "Educational

Value". He begins by defining what is the main purpose of school teaching, criticising the definitions which point to false or ill-comprehended or crude ideals, which turn our thoughts to the means rather than the ends of education, and which lead the educator away from the essential idea of education by fixing attention on the "puny individual" rather than on the "higher self" embodied in institutions; the ideal man, whom we can see only as a member of the great human family.

Education he defines as "the great preparation of the individual to help his fellow-men, and to receive in turn and appropriate their help". Whilst conceding that manual training is educative, he shows why it is much inferior to the usual subjects of school instruction.

"Man elevates himself above the brute creation by his ability to withdraw his attention from the external world of the senses and give attention to energies, forces, producing causes, principles. He can look from the particular to the general; without losing the particular he grasps together the whole realm of the particular in the general—in mastering the cause of anything he grasps together and comprehends an indefinite series of effects.

"A false psychology tells us that we derive all our knowledge from sense-perception, but we do not by the senses learn the idea of causal process. By this idea all the data of sense are transformed radically. They are given us in sense-perception as independent realities. In thinking them by the aid of causality, we make all these matters of sense-perception into phenomena—or effects and manifestations of underlying causes which are not visible or tangible."

Dr. Harris shows how school studies are calculated to

give general principles, right ideals, and to exercise the powers in elaborating the data of sense. "That the ordinary branches of instruction in school relate to this function of elaboration of data into plans of action far more than they relate to the mere reception of sense-impressions or to the exercise of the motor nerves, is obvious. It is not desirable that children shall be taught that rough hand labour is in itself as honourable as the elaborative toil of thought, which gives rational direction to the hand. The general who plans the battle, and directs the movement of his troops so that they secure victory, is of course the executive man in a far higher sense than the private soldier who mechanically obeys what he is ordered to do. The general may use his motor nerves only in issuing the words of command, while the private soldier may exert to the utmost every muscle in his body—yet the real executive is the general." And he concludes that only in so far as manual training is calculated to develop the higher faculties, ought it to be regarded as a valuable branch of school education. The pupils' minds must not however be fixed on the acquisition of manual dexterity, so that they think more of the "execution" than the musical thought—more of mere copying than of interpreting nature or the artist's ideal.

PIANOFORTE TEACHING.

By DOMENICO BARNETT, of the Leipzig Conservatorium.

LIKE every branch of school education, the teaching of the pianoforte requires consideration from two simultaneous points of view. Two all-important questions have to be answered with clearness and decision. What is, or what ought to be, the definite aim of the teacher? And what is the most efficacious process for achieving this aim?

As to the aim and purpose, we may happily dismiss, once and for all, the old and imbecile notion of the piano as a conventional "accomplishment"; in more accurate language an instrument of unintelligent and repulsive mechanical drudgery, calculated to eradicate from the pupil whatever modicum of *music* Nature might have bestowed on her. The cultivation of the piano for the sake of vain display is not yet obsolete. But though this unacknowledged object must inevitably continue to actuate many pupils and many parents, the teacher, so far from indulging it, should set his face sternly against it. It is true that it is his business to develop his pupils' performing powers to the utmost of their varying capacities. But this practical and visible result is but subordinate and auxiliary to one which is infinitely higher. Not every pupil, however musically gifted, has it in her to become a fine executant, any more than fine execution implies,

of itself, much beyond mere manual dexterity. But what the properly qualified teacher can do for *all* is to educate—that is to say to *draw out*—all that Nature has put into them: to show them what music means: to quicken and develop their musical feeling, be it much or little, by rendering it intelligent: to give their taste a foundation of right principle: to cultivate the ear and the brain as well as the hand: to put them in the right road for pursuing and perhaps specialising their studies after their school course is over: in short, to make them musicians, so far as musicians can be made.

The study of the pianoforte, then, is an indispensable means to a very large and serious end. There is no occasion to dwell upon the peculiar suitability of the piano as the basis of musical study. As to that, there are not, and cannot be, two opinions, even if universal experience had not settled the matter. Nor is it needful to dwell upon the qualifications to be required in a teacher. Every one knows the requisite qualifications of all teachers of all subjects. But it so happens that the teacher of the pianoforte, in any school where much is—as it ought to be—expected, has to contend with a peculiarly formidable list of preliminary difficulties, and to dispose of these before he can proceed to build upon a properly prepared ground. With these two topics, the preparatory and constructive portions of his duty to his pupils, to himself, and to his art, I will proceed to deal in as few words as the nature of so large a subject allows. And first, as to the commonest of all his obstacles, which is—

Previous Home Teaching (so-called).—Music, even more than with most other branches of education,

should begin with careful, intelligent and systematic instruction at home. Yet how seldom does the teacher find this to be the case! A truly appalling ignorance of the merest rudiments is constantly found in girls of all ages on first coming to school, after six or seven years of "lessons from a master" or "from a lady". In exceedingly few instances has any attempt been made to awaken a love of music, much less to lay a foundation for its serious study. Parents, one must presume, have not yet outgrown the delusion that anybody is good enough to start a child's musical education; whereas it is precisely during the period preceding school life that instruction generally produces the most lasting results for good or for evil; and it is usually for evil. It may be that a certain—or uncertain—amount of mechanical fluency has been acquired, but to the total exclusion of all else; and this leads to a further grave difficulty for both teacher and pupil—

Insufficient Time.—There would be amply adequate time for musical progress at school if the ordinary pupil had not so much to unlearn. As things are, the inevitable strain upon a girl imposed by other studies renders the comparatively short time allotted to music a period of weariness of mind. The pupil, naturally enough, rebels against the severity of a proper course of study; and it is long before the most patient teacher can get his impatient pupil well in hand. He is thus sorely tempted to make a—

Compromise with Conscience.—This is not stating the matter a whit too strongly. Handicapped by wrong preliminary training and its consequences, the teacher, in order to render some result visible to

parents and school authorities, often sacrifices substantial education to superficial display. How absolutely wrong this is, requires—it is to be hoped—no argument. But, inexcusable as it is on every principle of educational ethics, it is bound to be of constant occurrence wherever the school authorities fail to understand a music master's duty, and to support him in doing it fearlessly and honestly, without respect to the ignorant impatience of parents or pupils who have not laid to heart the maxim of *sat cito si sat bene.*

In proceeding to the positive work of teaching, as distinguished from the preliminary task of *un*-teaching, it will be the simplest course to dismiss these only too formidable obstacles as non-existent or overcome, and to consider at what a teacher should aim who enjoys all the advantages that he can reasonably expect. Under the most disadvantageous conditions he can at any rate aim as high as circumstances allow. Let us suppose, then, that he has the inestimable advantage of a pupil who is a complete beginner, with everything to learn and nothing to unlearn. At the very outset—

A Feeling for Well-marked Rhythm should receive cultivation. This is perhaps most easily acquired where a kindergarten has been available, by marching round to strongly-marked tunes or even to the beat of a drum. This feeling—more or less instinctive with most, and seldom beyond acquisition by any—should, as soon as possible, be reduced to form and order by—

A Knowledge of Time System and the Key-board: that is to say, a thorough acquaintance with the notes on the key-board, so that they may be readily recognised by their shape, together with their equivalent

rests and other signs belonging to the time system. All this should become instinctively familiar ; and is followed in natural sequence by—

A Knowledge of the Scale System.—The beginner should be able to locate the several scales on the instrument and to understand their formation. But time ought not to be wasted by insisting too much upon scale practice, until the pupil's hands are sufficiently strong. It will be quite sufficient, at this period of a course, to gain a thorough knowledge of the notes and fingering of the various scales and chords, great care being taken at the same time to cultivate a good position of hand and a proper use of the fingers themselves, by way of foundation for a good and sound technique. In the case of older and more advanced pupils who have been neglected in this direction, it should be constantly impressed upon their minds that this process is but a means to an end ; that adequate interpretation of music is impossible without this mechanical exercise of the fingers, which must be trained to follow and express the most delicate *nuance* of their owner's intention. On the other hand, such pupils—especially those gifted with a natural dexterity —should be warned that manual skill has nothing, as such, to do with *music:* that brilliant execution and the triumph over difficulties are neither more useful nor more admirable than dancing among eggs unless they are subordinate to the real sense and meaning of a composition. Having fairly mastered the notes, time and scale systems, the pupil is now in a position to be introduced to—

A Methodical Selection of Exercises and Pieces Presenting Varied Rhythmical Difficulty, beginning with the

simplest, and gradually advancing to those of increased complexity. As the pupil advances, easy duets, dances, marches, etc., sometimes if possible accompanied by another instrument, may be given with advantage, insistence being laid upon a *proper habit* of *counting* time. This should not be done in a drawling, undecided manner, but with a clear, sharp and decided utterance. It ought not to be—but is—necessary to add that the production of a fine broad tone and proper touch should receive attention from the outset; and meanwhile, even from the earliest moment of her studies—

No Bad Music should be given to a Pupil for any Purpose, or under any Circumstances.—No doubt where a very bad state of taste exists, it is a matter of necessity to start from a comparatively low level of merit; because in respect of music, at any rate, a pupil should never be given what she cannot possibly understand. Dr. Arnold, it is true, used to say that if you only taught a boy what he could understand, you would teach him very little. But large margins must be allowed to large maxims, and had Dr. Arnold taught music, where the first and foremost thing is taste, instead of language, where the first and foremost thing is memory, he would have modified if not reversed his dictum. Yet though the pupil's taste and intelligence may be at a low point, and require very simple fare, there is happily no lack of good music adapted to every degree of intelligence, and even of appetite; and under its influence it is surprising how soon any taste for the positively bad will imperceptibly pass away. Of course, the teacher will have to observe much thoughtful care in his selection of music in each individual case of this

kind, always remembering two things—to give his pupil the best that she can comprehend, but never to surpass her comprehension. To read Shakspere in a kindergarten would not be worse waste of poetry and brains.

But it is not enough merely to avoid bad music—that can always be done. There is good music which may be as unsuitable to certain temperaments as it is suitable to others: and the teacher should be something of a psychologist in order to exercise his judgment prudently. Chopin's would be *bad* music if given in large doses to a girl of sentimental and romantic temperament, though she would probably excel in it. She needs something of a more robust and less emotional character. Bach's music, on the other hand, is always right for all and cannot be too much employed. For studies, Mr. Franklin Taylor's judiciously selected *Progressive Exercises* may be safely and strongly recommended, as enabling the teacher to find, without trouble, instances, from the best composers, of every kind of difficulty.

The Musical Ear simultaneously demands attention. Some pupils have a natural gift for discerning, without reference to the instrument, the exact pitch of a musical sound. This is by no means a necessary indication of great musical ability; but it is unquestionably a very great advantage. Fortunately, it can to a considerable extent be cultivated in many cases where it does not exist naturally: and for this purpose there is nothing so efficacious as—

The Elementary Singing Class, which should be a portion of the curriculum of every school, and should be compulsory for every student of music. Properly

conducted, this class cannot be valued too highly. In it, rudimentary theory is taught in a systematic and practical manner. Very few girls are able to think musically. To the best informed among them a major third consists of so many semitones, and can be found in so many scales; but when seen upon paper, the notes convey no idea of their proper sound. Here then, the pupil will be taught to recognise and sing all intervals and chords, and even to write them down from dictation. As practical instruction in time and rhythm forms an important portion of the lesson, the evil effects of the defective sustaining power of the pianoforte can be in a measure remedied. Franz Wüllner's system is excellent.

Thus the mechanical portion of the pianoforte teacher's work may be very beneficially supplemented and extended, by being placed in fresh lights under different conditions. The use and meaning of any study are never so manifest as when it is seen to be applicable in several directions.

Here concludes what may be regarded as the first period of instruction. Given sufficient time for practice, fair average ability and no physical defects to contend against, good results may reasonably be looked for. As the pieces selected for study assume a more important character, the pupil should be made to perceive how they are constructed; how one portion grows out of another; and by what artistic process a composition has obtained its symmetry and balance.

The Study of Harmony should now be begun. In addition to the study of part-writing and perhaps counterpoint, standard compositions should be carefully analysed. This gives a power of comprehension

and appreciation quite apart from any capacity for interpretation, and probably better worth acquiring. Many persons combine considerable musical talent with a physical inability to achieve excellence as performers. Such of these who have persevered to this point will have learned to find an intellectual and sympathetic delight in the works of the great masters, and an artistic pleasure in the performance of their more gifted interpreters.

More successful executants may now proceed (when it is considered desirable) to the *more serious study of scales and finger exercises*, the teacher watching carefully for any signs of physical weakness. Willing but weak hands are too often injured by overwork, and the adoption of some means for strengthening them, suitable to each individual case, should be made an essential part of their training. Indeed the teacher would do well to make a careful study of the peculiarities of hands, very great difference of treatment being required in different cases. Some hands are so unfit for pianoforte playing as to make it a question whether it is worth while, for any reason, to continue the attempt. To return to scales and finger exercises—it will not be going too far to say that they cannot be practised too assiduously at this point. As a stimulus it may be found advisable to allow the pupil to avail herself of the numerous musical examinations so much in vogue at the present time. The plan adopted by Mr. Oscar Beringer in his *Technical Studies* is admirable, and strongly recommended. *Musical memory* should be assiduously cultivated. No piece of music can be said to be learned until it has been committed to memory. Any tendency of the process to impoverish the power

of sight-reading can be adequately guarded against by the daily reading of new music.

A Regularly Organised System of Sight-reading Classes.—No school should be without such classes, and they should be for that matter supplemented by a few minutes each day to be occupied in playing through a new piece from beginning to end, without stop or interruption, however wild the blunders may be. These will soon become fewer and fewer. During the hours of solid practice, however, blunders are quite another matter, and those unable to help themselves in this respect require—

The Attentive Superintendence of Practice.—The time allowed for practice should be arranged to suit the requirements of the pupil, and need never be excessive or interfere with the general course of study. With care and thought, much good work may be done in a short time. A large proportion of pupils of all ages are unable to perceive their own faults, and the time for practice may thus become a means of forming and confirming fresh bad habits as fast as the old ones have been eradicated. Moreover, since the time allotted in schools to practice must needs be short, every moment of it should be utilised; and very clear explanations should therefore be given to those who superintend it of what is required as well as to the pupils themselves—explanations which should be punctiliously followed. There are also many cases in which the instruction of the promising or fairly well-trained young pupil may be almost entirely undertaken by a competent assistant teacher, but subject to the careful supervision of the master, who should be responsible for her proper progress.

Before closing these remarks, which have not been easy to render systematic or consecutive, it would be inexcusable in these days to omit all mention of—

Examinations.—This is too large a subject to be dwelt upon in relation to music alone. But it must needs be said that here again the temperament of pupils must be considered. In some cases good work is helped by examinations of one kind or another; in others it is hindered. On this subject we all have our own views. However, if they can be met easily and in the regular course of study, without forcing or cramming, or interrupting solid work, let them be undergone by all means. Otherwise their use becomes abuse, and frequently tends to entirely false ideas of the proficiency of those who pass them. An apparently low point may be substantially preferable to an apparently high one.

But no matter what point is reached, let it be *thoroughly* reached, even though the time occupied in attaining thoroughness be apparently deducted from what is required for further progress. The deduction is but seeming—not in reality. School work is neither the end, nor the whole, nor the largest, nor the most important portion of education. Far better for a girl is it to leave school able to play fairly well at sight, and to execute a moderately difficult or even easy piece faultlessly, than with the *prestige* of a brilliant performer which will crumble to pieces for want of a foundation as soon as she is left to her own resources. Another grand mistake, in the same connection, is made by parents who send children abroad for the continuation or completion of their musical education before, by having been properly and systematically

grounded, they are able to reap the slightest benefit from foreign training. But, almost before all things, I would insist upon a good general education for all who show marked musical ability, and are thus justified in making music their special and paramount subject of study. Music is so absorbing a pursuit that it tends to narrowness by its own nature; and all that inclines to extend the outlook and enlarge the mind during the impressionable period of life, is even more important to the musician than to those who are engaged in pursuits of a less exclusive order. The really cultivated musician is a prize product of education; but the *mere* musician, who may be the mere executant, and nothing else, is the last sort of being that one would wish any school to evolve.

To conclude, there is perhaps no royal road to the successful study of anything; there is certainly none to the pianoforte. I have not attempted so vain a task as to try to make one. What I have undertaken is to point out the crags that must be faced with a stout heart, and the best and safest path—which is not necessarily the shortest—to the vast stores of intellectual pleasure and profit awaiting the aspirant long before the whole journey's end.

THE VIOLIN.

By Lewis Hann.

THE teaching of the violin in our schools has of late years attained a high grade of efficiency. The progress of musical education generally has been remarkable, but most especially so in the study of the violin, and perhaps no branch of the art demands so much of the teacher. It is not enough for him to be a good and brilliant performer; the real gifts which constitute the successful teacher are great patience, self-control, tact, discretion and a good knowledge of character. It is not judicious to lay down hard and fast laws, and pursue a certain beaten track in teaching, for no two pupils are constituted alike, and it is often desirable, according to the disposition of the pupil, to take a somewhat circuitous route to attain the desired goal. With really talented pupils, of course, no trouble whatever is experienced—it is the bringing into life hidden or dormant abilities in the less gifted which proves the art, science and experience of the teacher.

The establishment of a string orchestral or an *ensemble* class, even in a humble way, is of great advantage to violin students. Not only are the practices a source of pleasure and delight to the pupils, but they help greatly to improve them in the practice of sight-reading; and in the study of *ensemble* music they learn to give more serious attention to the marks of expres-

sion and to observe the *nuances*. Also by taking part themselves in the performance of important compositions they learn to appreciate these properly when they hear them rendered by great performers. It is well for the pupils to attend high-class concerts as frequently as possible; the earnest, observant student will derive great benefit and learn much that is invaluable from hearing good works performed by sound artists.

CLASS-SINGING.

By FLORENCE MOSLEY, Pupil of Shakespeare.

CLASS-SINGING is good for all; it educates not the voice only, but ear, eye and memory. Class-singing. Classes of young children should not be composed of less than fifteen or twenty; if the voice of a pupil is too audible to herself and her neighbour, she becomes self-conscious and shy; in a fairly large class the pupil merely swells a general body of sound. In a class of thirty the teacher should be able easily to detect a defaulter; she should not however correct by name, as this tends to produce nervousness; she should indicate the direction from which the faulty sound proceeds. A few voices should not be allowed to predominate over the others, and care should be taken to prevent any over-exertion of voice.

Position is very important; the pupils should stand upright, with heels together and hands loosely clasped in front. Good order must be maintained, and thorough attention exacted.

The classes for young children should not exceed half an hour in length, but for elder pupils forty-five minutes to an hour is desirable.

In each lesson a few test questions on notation should be given, and in order to avoid the Notation. answers proceeding only from a few of the more musical or quicker pupils, all answers should be written.

Ear tests are best taught by taking the middle C as a starting-point, the pupils being required to give the name of every note struck within the octave, and also of the interval so formed; when they are thoroughly familiar with all the sounds contained in that octave, the process should be repeated with another note as the tonic. Having written the ear tests, they should proceed to sing them, the conductor striking a note upon the piano and requiring the class to pitch any interval he mentions either above or below that note, without assistance from the instrument. By this means the pupils become familiar with the relation of one note to another, and so find no difficulty in reading.

Ear tests.

Musical dictation is another important means of training the ear; the melody of a simple well-known tune—if possible within the compass of an octave—should be played over; the key and starting-note being given to the class, they should be required to write down the notes of the melody from memory. At first it will be found necessary to play the tune over several times, until the class becomes used to the exercise. To more advanced classes more elaborate melodies can be given, and the harmonies filled in.

Dictation.

This is best taught by making each member of the class beat time, while the conductor plays tunes of various measures on the instrument used for accompanying the class. This enables the pupils to realise the strong and weak beats.

Rhythm.

Another way is to dictate the notes of a melody to the class, making the pupils fill in the bar lines and time signature.

Reading at sight.

The pupils should first read unaccompanied single notes from the blackboard, followed by easy exercises in unison, and then exercises in two or three parts; the more advanced classes should read some oratorio music and standard works.

Voice production.

Purity rather than volume of sound should be insisted upon; the former can be satisfactorily obtained only by a series of diaphragm breathing exercises, which will result in the throat being left free and open. The first vocal exercises should consist of simple vowel sounds, sung on every note from the middle C to the fourth space in the treble clef. These should be followed by tuned consonants, "koo" being most useful for bringing the tone forward. Sustained notes should then be practised, also major, minor and chromatic scales.

Singing in parts.

On receiving the part-song the pupils should be called upon to give the key, time and form of the composition. The simplest method of teaching young children to hold their several parts is to give them simple canons and rounds. In a two-part song the whole class should first learn the seconds and then the firsts; when thoroughly conversant with both parts, the class should be divided, the pupils being called upon to sing either firsts or seconds at any time. When the notes have been learnt the words should be committed to memory and the part-song sung without copies of the music; we thus train the memory, enable the pupils to stand in good position and to give full attention to the conductor's beat. Elder classes may be taught to sing in three or four parts, but much care is needed in the selection of part-songs, as it is difficult to get compositions with a small

enough compass to avoid straining either in the upper or lower registers of young and untrained voices. I need hardly add how much choral singing helps to promote a feeling of sympathy, a right kind of emulation, and a fuller appreciation of beautiful compositions than can be gained by solo singing or passive listening.

SINGING. TONIC SOL-FA.

By RHODA ROONEY, Certif. Fröbel Society, Cl. 1.

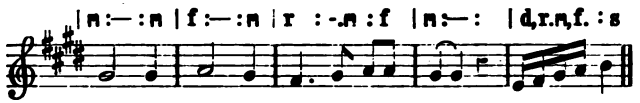
THE Tonic Sol-fa system is one which gives every advantage for producing good and accurate sight-singing, and this without the aid of a piano or any other instrument. The pupils can test the notes as they proceed by referring to the Doh from which they start, and which is regarded as the governing note of the scale or piece.

The Doh is not necessarily middle C on the piano, but is the tonic of any major scale, all the notes of which have a certain association with each other and with the governing Doh. This relationship of sounds can be felt by the pupils as they listen attentively to the first easy patterns sung by the teacher for their imitation, thereby discovering what is understood by the "*mental effect* of sound". Sufficient practice of sounds with "the modulator" gives familiarity with the notes of the scale, change of key, or pitch in any relation, and it will be found that it becomes almost impossible for the class to sing out of tune. The Tonic Sol-fa *hand-signs* practised with the modulator are a very considerable help, whether the class is composed of little children or adults.

Time is indicated by lines and dots. A perpendicular line is placed before a strong beat or pulse, and a colon before a weak pulse. A single dot divides the

beat in half, and a comma is used to show the division of a quarter beat. A horizontal line shows a tied note, or its equivalent, and a rest is represented by a blank.

Three-pulse measure—Doh is E.



The great advantage of the Tonic Sol-fa system over any other is the definite and graduated ear-training which the pupils must derive from it, rendering the singing true and accurate, however poor the voices may be.

It is also of great use in developing the voice and training the ear of those who are older, and have for some reason neglected all musical and vocal culture.

Books recommended—Curwen's *Tonic Sol-fa Courses* and *The School Music Teacher*, by Evans and McNaught. Publishers, Curwen & Sons.

ELOCUTION.

By Rose Seaton.

THE speaking voice is often left to what we are pleased to call "Nature"; but a natural voice and a fine speaker are like the language of the race, the product of cultivation.

Weak and toneless voices are frequently the result of faulty production. We may divide the vocal apparatus into three parts: (1) Lungs; (2) Larynx; (3) Mouth. Consider the functions of each separately, and afterwards their relations to one another.

Great care is needed to develop the lungs, that they may store the requisite quantity of air and supply the waste of it constantly and silently; breath control is of primary importance.

In reading aloud, teaching, lecturing, the air in the lungs should be felt as an active force. All speech is uttered on the outgoing current of breath. The vocal chords in the "voice box" or larynx close when sound is made, and toneless or woolly voices show that the chords are slack and the breath is passing through without being used for sound, as when the bow of a violin passes over loosened strings. Note that the larynx should never be tightened by the band or collar of the dress.

The three principal resonators for sound are: the bones of the chest, the head bones, and the roof of the mouth.

Right position is very important. Both in standing and sitting the muscles should support the body so that the lungs may expand easily. To inhale and hold a deep breath is a silent and useful practice. It strengthens the walls of the thorax, develops the lungs, steadies the action of the heart, and consequently the voice.

The habit of bending the body over a desk or book, of sitting with the spine curved outward and the chest collapsed, of standing with the weight upon one foot, especially upon the heel, should be avoided. It is not enough to speak, but to speak well.

All articulations are made in the mouth, and the sound must reach the point where the letter is formed; the place of the letter in the mouth must be understood, and the quality of it.

The alphabet is best divided into four groups: (1) Vowels; (2) Explosive consonants; (3) Vibrative consonants; (4) Toneless letters.

Every word in English is complete in itself, and no letter must be omitted or joined to another. The omission or slurring of the small words constantly mars the sense; stress is not required, but distinct utterance. A small voice, if the articulation is distinct, will travel far, while a loud, ungoverned organ creates confusion of sound and cannot be understood; nor should the speaker maintain a fixed pitch, but allow the voice to pass through many gradations of sound, and endeavour to express the language naturally and musically.

DRAWING, PAINTING, ETC.

By PAULINE M. RANDERSON,

National Silver and Bronze Medallist (Painting); Art Master's Certificates, I., II. and III., Science and Art Department; Teacher-Artist's Certificate, Royal Drawing Society; Drawing Teacher to the Princesses Marie and Victoria of Edinburgh, 1884; Art Mistress, Cheltenham Ladies' College.

MR. RUSKIN says, "Accuracy and rapidity of perception . . . are especially what masters and schools can teach". Also, that "All qualities of execution are influenced by, and in a great degree dependent on, a far higher power than mere execution—knowledge of the truth". With Fröbel's teaching, and these thoughts in mind, we observe the first attempts of children at drawing. They draw from memory, and their drawings exhibit their knowledge of the things drawn. In the first lessons we do not interfere with their own natural method, but we help them to further investigation by encouraging them to look again at the object, asking them questions about it, and drawing with them. We give exercises for the hand, wrist and arm, by running the pencil round cardboard shapes of simple geometric or ornamental forms; also by repeating straight and curved lines on squared paper. We foster their love of colour and train their inventive powers, by using the brush. If we take a brush and fill it with colour, we can (without any effort of drawing)

Natural drawing of children.

Brushwork.

produce two simple units or elements. If the point only touches the paper, we have a dot; if the side, we have a form determined by the size and shape of the brush. We use these elements on a network of squares (of sufficient size), and find them capable of producing the simplest possible designs. By adding short lines, both straight and curved, drawn with the point of the brush, we increase our power and variety. With the same elements we can approximately imitate some very easy natural forms, but as "it does not train the child to great accuracy," we are very careful to choose such flowers, leaves, insects, etc., as these simple means can most nearly represent. We continue our practice in drawing lines on squares for two reasons, *viz.*, it is an easy method (greatly used by designers) of drawing patterns, in which every variety of straight and curved lines may be used and placed in all conceivable positions, hence great facility of line drawing may be acquired, the influence of which will be felt in the writing exercises, and new combinations may be made by the children themselves; also, many simple drawings of objects may be done, with the advantage of being true in their proportions, before any actual training has been given in that particular. We do not allow the use of india-rubber in this practice.

Simple designs.

Line drawing.

Our next use of the brush is for real drawing; the matter for our designs being no longer mere accidental forms, but such as require actual drawing like those on Greek vases. The flexibility of the brush, and natural movement of the wrist, render it easy to produce these forms which are varied in shape and thickness by pressure. The network of

Brushwork proper.

squares may be abandoned in favour of filling spaces (such as the cardboard shapes previously mentioned) with ornamental arrangements.

Proportions obtained with the ruler.

We come at length to study proportions by the aid of the ruler. Straight lines of various lengths are ruled; these are divided into simple proportions. Exercises are given in judging the relative lengths of lines drawn on the blackboard, etc. Squares and oblongs are constructed. Simple flat objects with straight edges are used as models; they are measured and drawn with the aid of the ruler. The drawings are always of correct proportions though the size may be varied, the measurements being reduced to $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, etc. The relation of this work to arithmetic is apparent.

Proportional measurements with the pencil.

We give much time to teaching the use of the pencil for measuring proportions thus: one eye is closed, the pencil is held up between the eye and the object, at arm's length away; the thumb indicates on the pencil the apparent length of the part to be measured, which (by moving the hand still kept at the same distance) can be compared with the whole until its true relationship is ascertained.

Memory drawing.

We give exercises in drawing from memory all along the course, the subjects being chiefly animal forms so interesting to children. We now pass on to drawing from flat objects having some

Object drawing.

curved as well as straight edges. Let us suppose we have chosen a Japanese hand-screen, which we hang on the blackboard parallel to the class. The size of the drawings is first determined. The proportions are thought out and indicated. The model is handed round the class, attention being called

to its construction. When replaced in its original position, the curved edges are compared with straight lines to ascertain their true nature. Construction. A drawing is then made on the blackboard, the class following step by step. When complete the drawings may be tinted with flat washes of colour. The pattern may be drawn with the brush or a new one invented.

Mr. Taylor reminds us that "it required all the ages to the fifteenth century of our era to master the laws of foreshortening". To introduce these "laws" we use straight-edged flat objects, such as a map or picture on the wall. We sit, not now facing the model as before, but so that one edge may be described as being nearer to us, another farther from us, and two receding. We have to deal with appearances rather than realities. The edges we know to be horizontal, no longer appear so; we compare them with the pencil held horizontally until we realise the angle they make with it. Foreshortening. Appearances. The width has apparently grown much less and must be compared with the front edge. The farther edge, which we know to be the same length as the nearer one, now looks shorter. Thus we think out the apparent changes and make our drawing accordingly. In the same way we draw the top of a table, and when able to do so correctly we place flat objects with curved edges on the wall or table, or diagrams with curved lines on them, and by comparing the curves with straight lines we realise their apparent forms.

In consequence of the children having each a different view of the model, it is more satisfactory to take a very small class, giving each one as much personal attention as possible until they get accustomed to the work. Class and individual teaching.

It is well to have some work of a more popular nature to alternate with these lessons in foreshortening. For instance, the brush may be used for painting easy leaves, flowers, etc., direct from nature, or for flat tinting of ornamental forms drawn from copies or the cast.

Plane geometry.

Exercises in drawing from written descriptions, involving knowledge of simple geometric terms and figures, should also be given.

Model drawing.

We proceed to model drawing proper, working in the same way as in the lessons on foreshortened planes; obtaining as accurately as possible the angles at which lines appear to recede; measuring the widths of receding planes and comparing distant lines with near ones. We have to deal with perspective, "the science of appearances," and we do this in the most *practical* way. We realise that it is only too possible to teach this subject in a wrong manner, by putting *rules* in the place of accurate observation. We therefore evolve our perspective sketch from the model and find it a great help to intelligent drawing. We frequently draw our models from memory. Alternating with these lessons we frequently take a course of elementary shading. We encourage the child in its own natural preferences and mode of expression, having an excellent opportunity for doing so in the work done at home during the week, and especially during the vacation.

Perspective.

Individual tastes.

Suggestive drawing.

We seek to modify the rather stiff and rigid kind of drawing hitherto necessarily done, knowing that higher art demands a suggestive treatment. We use such natural forms as fruit, flowers,

foliage, of which we draw such lines as seem best to interpret them. We study very carefully their growth or development. We use also casts of animals, human features, etc. Growth.

We endeavour to make our shading course a good foundation for painting. We give exercises in flat tinting and graduating to obtain power over the material (chalk, charcoal, pencil or otherwise) and to ascertain its possibilities. We draw from objects having flat planes such as a cube, placed so as to receive a strong contrast of light and shade; from cylindrical or other rounded objects, in which we study specially the shaded side with its reflected light, and the position of the high light. We work from groups of objects of various colours, trying to obtain their relative tones, textures, etc. Shading.

We try to arouse interest in the light itself, showing (by working with the class) how we must sacrifice minor details to emphasise its play on the group; also in the mystery of shade, wherein reflected lights must often be subdued and details lost. Pupils have to draw also from memory. Sacrifice. Mystery.

The figure or painting may follow.

No originality is claimed for the methods and course advocated. They are founded on the desire to be educationally useful, interesting to the pupil, and a good ground on which to build artistic work in painting and designing for wood carving, china painting, needlework, etc.

BRUSH DRAWING.

By Mary Farbrother, Cert. Fröbel Society.

All children take pleasure in drawing. Who has not seen a baby make unintelligible strokes on a piece of paper, at the same time exclaiming, "See, a chicken!" "a train!" "a gee-gee!" But the pleasure caused by such productions is not to be compared with the delight with which a child of three or four years old will handle a brush, dip it in the paint, and then produce a coloured impression on the paper. The happy laughter of the baby as he sees his flower or leaf appear will not soon be forgotten by those who have put this magic wand into tiny hands. And the interest derived from brush drawing does not pass away. Each year the child will be able to obtain truer representations of the objects he attempts to reproduce, and every fresh effort will give pleasure anew to the child and the teacher.

Brush drawing may be regarded from an educational standpoint. Many useful papers have been printed showing its educational value, and the help it gives in developing the artistic sense, powers of observation, etc.

With very little children it seems best to keep to the simplest exercise for some time, and to let them represent any leaves, flowers or insects, which can be made with the flat impression of the brush; they will

soon learn to hold the brush perpendicularly, and thus obtain thin lines for stems and branches, and the finer parts of other objects. Later on they will be able to represent the forms of various animals, as well as an infinite variety of flowers and leaves.

It is most essential that the class should have the real object to observe and copy, and whenever possible a specimen should be given to each child, for, as Ruskin says, "The sight is more important than the drawing"; and an earnest seeking after truth and accuracy must leave its impression on the character.

PAINTING.

By Arthur Richardson, Pupil of Bougereau, Paris.

LET beginners have real objects to draw from, or any plaster casts of ornaments which can be made sufficiently interesting. An H.B. pencil is the best to use at first, which may be changed for a B. or B.B. as more shading is required, until the pupil is ready for the more vigorous qualities of charcoal. Use the charcoal in stick on a rather rough paper, with bread for correction and picking out lights; in fact, use the bread as if it were a white paint. It is better to substitute charcoal for chalk and stump as it is quicker in execution. For complete representation, oil colour gives the fullest range of light and shade possible.

Pupils should not spend time in elaborating and finishing, from which little knowledge is gained; it is better spent in mastering new difficulties than in making tidy an old drawing.

Let it be clearly grasped before beginning what sort of a drawing is going to be made, and how the result is to be reached. One can generally explain better by working on the pupil's own drawing, but one must encourage unaided effort. Each new study should present fresh difficulties: one must insist on precision, especially in the drawing and placing of shadows and bright lights. Learners should try to get every touch right at first, and never knowingly paint or shade an incorrect tone.

Perspective should be taught from real objects; a few simple rules are sufficient: rules must be used to assist the eye in getting directions right, not to take the place of looking to see how lines actually do go. Though geometric models give all necessary problems in drawing (till we come to study from the human figure), yet they are less interesting than other things.

Let the first study for complete shading or painting be something that has an evident brightest light and a fairly dark bit of shadow. A big jug partly glazed is a capital subject. If the darkest and lightest spots are got right first, the intermediate tones will come easily. So long as colour is made harmonious, treat it as of secondary importance to correct tone. Choose colours partly for tonic possibilities, say red, blue and yellow, two of each, one dark and one light, rather bright than otherwise. Groups of objects, or still life, are perhaps the most interesting subjects till the pupil is ready to draw from life. Drapery, a curtain or long cloak, thrown over the back of a chair makes a good study.

A knowledge of the proportions of the skeleton is most useful when drawing from life; more especially if only a draped model can be given.

A certain amount of drawing from the antique is necessary before beginning from the human figure, which is the best and highest study both for drawing, tone and colour.

FRESCO.

By EADIE REID, Pupil of Sir W. B. Richmond, R.A., K.C.B.

THE value of drawing for decorative purposes has been neglected in the past. An effort is being made to remedy this by the teaching of the principles of ornament and the laws of decorative art-form. The study of Greek Ceramic art shows the important part that the brush plays in the formation of conventional form. It is therefore essential before dealing with the theories of design or composition that a thorough mastery over the brush be acquired. The shapes which the pressure of the brush gives us, will enable us with ease to trace the evolution of pattern from the primitive zig-zag or dot and line to the subtly graceful scrolls and meanders of later times.

Before proceeding to more advanced problems in design we must confine our attention to the filling of spaces, such as squares, oblongs and circles, with these simple brush marks suggesting buds, leaves, flowers, etc. For this purpose we can find no better models than the Greek vase and the skilful brush renderings of Japanese art. When the student has succeeded in arriving at something like an original composition, we must be careful to insist upon the value of sound, well understood growth running through the whole scheme, while simplicity of line and originality of thought should be encouraged. The

application of the principles of design ought to be demonstrated by cartoons showing the ornament designs of different races and ages. It would be advisable to work these before the student, showing every line of their construction, stage by stage, until we have a clear workmanlike drawing upon a fairly large scale.

When the pupils can express themselves with freedom, an actual piece of work should be taken in hand, such as panels for a cabinet or piano, the designing of surface decoration, wall-papers, hangings; the use of the stencil and frieze painting. Ladies can very well produce such friezes on the walls of their houses; some in Cheltenham have been most satisfactorily conceived and executed in *tempera*, while others are designing panels and frieze decorations with a view to their execution *in situ*.

CHINA PAINTING.

By MINNA CRAWLEY, Silver Medallist.

ANY one possessing some knowledge of drawing or painting may acquire the technique of china painting without either much difficulty or expenditure of time.

China painting possesses many features of interest which make it both a useful and attractive study for young people. It is one of the very oldest forms of art—a fact interesting of itself. The revivals in majolica, faience, and many other kinds of ware of late years, show how widespread the appreciation of the factile art has become; and with the desire for good form and substance has come that of the most suitable decoration of it.

Much may be gained in the knowledge of design by the adaptation of decoration to different styles, so as to suit the form to be ornamented. This develops also originality and manual dexterity, and tests patience; no work in this branch can be completed without the process of "firing," which assuredly "tries every man's work"; for while it brings to perfection the colours, and gives the necessary strength and gloss, it also fixes and brings into strong relief every error—and warns against future mistakes.

Vases, flower-pots, tiles for fire-places, dessert services, tea-sets and many useful household articles can be ornamented; and thus taste cultivated and the home beautified.

ART NEEDLEWORK.

By MINNA CRAWLEY.

THE artistic faculty latent in so many women who perhaps have never studied drawing or painting, has in this accomplishment been developed quickly and more easily than in the higher class of art.

Art needlework cultivates the taste for design, colouring and general effect; and is also interesting as an ancient revival.

The old historical tapestries, both English and foreign, have been freshly studied of late, as well as the ecclesiastical work of the fourteenth and fifteenth centuries; some of this beautiful work has been equalled if not excelled in some of our modern schools of needlework. There can be no doubt that needlework, from "high art" embroidery down to the plain sewing and making of garments, is excellent for girls, and it is to be hoped that the use of the needle will never be given up in our schools or homes. Both art and plain needlework are now being successfully carried on, even with the very limited time that can be devoted to them, by the pupils of the Cheltenham Ladies' College.

WOOD-CARVING, ETC.

By M. S. LYNDON SMITH, Honours Certificate, Class I., School of Wood-carving, South Kensington.

WOOD-CARVING and kindred handicrafts, which can be used for forming and beautifying the common objects in daily use, have much educational value; they help to develop the æsthetic faculties, and give habits of neatness and accuracy and dexterity, and although children at school cannot be turned into finished artists, an incentive may be given at school; and we may discover in seemingly dull children faculties which, without manual instruction, would remain dormant.

Incidental teaching may be given to elder children in the history of ornamental design, its uses, purposes and meaning; also its inseparable connection with architecture explained, so that they may be the better able to understand the beauties of our own cathedrals, and compare these intelligently with the work of other countries and times. For those who can never attain to great proficiency, an intelligent interest may be awakened in the work of those to whom we owe the renaissance of handicraft, which is so characteristic a factor of our own century.

MODELLING.

By EVANGELINE STIRLING, National Gold Medallist for Modelling, Nääs Certificate for Sloyd.

NO better definition of modelling can be given than this: "As carving is the art of cutting down, so modelling is the art of building up".

Modelling develops the power of observation, for to imitate we must observe closely, and only by close observation can we learn to appreciate the beautiful which is enshrined in those grand specimens of ancient Greek sculpture which have come down to us, and to which the untrained eye is blind. The sense of touch is quickened to a remarkable degree, for the subtle modelling of a surface necessitates not only its close observation by the eye, but its perception by the hand. Also the hand becomes cunning in dealing with the material, and the power of construction is brought out. It is a sure foundation for drawing and technical education, and instances are not wanting of its utility in the higher branches of learning. Any plastic material may be the medium, but clay is mostly used.

The first and chief tools are the hands and fingers, but one or two others, the shapes of which will be suggested by the necessities of the work, may be added later on. A modelling board or slate, a straight-edged piece of wood and a sponge are required.

Tools.

Beginning in the kindergarten, modelling should continue without a break through the ordinary term of school life. In the elementary stage class teaching is of the greatest value, but no such class should contain more than eighteen pupils. The advanced stage will require most individual teaching.

Teaching (class and individual).

Studies should be chosen from a carefully graduated course, the elementary stage beginning (after the kindergarten) with natural objects such as simple fruits, some of which the pupils may have already made, but which must now be modelled on a larger scale and with more intelligence and accuracy. They should then pass on to more difficult fruits, vegetables, leaves (taken singly and then on the branch), then objects such as a worn slipper, etc., etc.

Elementary.

Each child should be provided with a duplicate of the object, sufficient plastic material, a suitably shaped board and a sponge. Equipped in like manner let the teacher build up a model in view of the class, giving the reason for each step as she proceeds. The first ten or fifteen minutes of a lesson following the completion of a work, should be devoted to the modelling of a small memory sketch of the last object executed.

Lesson to class.

In the advanced stage the objects of study should be chiefly casts and natural foliage, flowers, simple drapery, casts of simple ornament of bold design, but not too geometric: animals' heads, or the enlarged human features as Michael Angelo's "David," masks of antique heads, hands, feet and whole heads.

Advanced stage.

Casts must always be of the best and those most

approved for art training. Natural objects must be such as lend themselves to artistic representation. As a rule, the models should be executed in the round, and only at the end of the course should bas-relief modelling (where foreshortening must be resorted to) be allowed, for this is the most difficult of all plastic work. Note.

Should there be any marked artistic talent it will have shown itself before the end of the course, when the pupil may be allowed to specialise.

SLOYD.

By Evangeline Stirling.

SLOYD, as taught at Nääs in Sweden, its head-quarters, is the most perfect educational system of handwork in wood which has yet been produced. It is suitable for girls as well as boys of the ages of ten and eleven and upwards.

Each child is required to make a series of useful articles called models, in which round work and the square work of the carpenter are duly alternated; and each model introduces, with the nicest regard to the graduation of difficulties, some new tool or fresh exercise with a tool. It is used as a means of developing physical power and of forming character and habit, rather than of attaining utilitarian ends. The tools are mostly those ordinarily used by a carpenter, with three or four extra ones, *viz.*, the knife, the axe, the draw-knife and the spoon-iron. Specially shaped carpenters' benches, adapted to the size of work done, are also used.

CONCLUSION.

RELATION OF SCHOOL TO HOME.

By Dorothea Beale.

So far we have spoken of the life of the child in the school. I now enter on another branch of the subject no less important, which in a book intended for teachers I shall treat from a teacher's point of view.

I have spoken of the great change which has taken place during the last fifty years. In the days of Locke, of Rousseau, of Sandford and Merton, and of the Edgeworths, it was only possible to educate a boy by a private tutor at home. Now the sons of the nobility are no longer educated in their own homes, nor sent, as in earlier days, to other families. A similar change has taken place in the education of girls; every year more of those who would formerly have received their education entirely from governesses and masters at home, or at most gone to a very small boarding school, are studying as day-pupils at large schools and colleges, or living in boarding-houses. The question arises then, since the time is in the case of day-girls divided between the school and the home, how shall the relations between the two be adjusted? In the case of the day-girl, about eleven-twelfths of her time are spent at home; in the case of the boarder, nearly a third of the year. Everything must depend upon the harmoni-

ous working of the home and the school, if the education is to be profitable, and the problem requires the most careful attention. Teachers full of zeal and devotion are eagerly seeking to deepen their knowledge, to widen their experience, and when they have come to the conclusion that a well-proportioned curriculum is necessary for mental development, that early specialisation is harmful, that daily distractions are wasting the nervous energy of the growing girl, they are aggravated by hearing, "Mother thinks geometry is no good for a girl"; "Please, I am to drop my English lessons, and give nearly all my time to music"; or, "I could not do my lessons because I was at a bazaar"; or, "Friends invited me"; or, "Mother does not approve of my working in the holidays".

And then they are tempted to do what specialists in all ages have tried to do—to set up a beneficent despotism, to say, "I am Sir Oracle, and when I ope my lips, let no dog bark!" I once heard the Head of a College address a body of teachers, advising them what to say to an opposing mother: "My dear madam, I know what is best for your child". There are doctors who assume a dictatorial attitude, but what should we say, if a mother let the child go on taking his medicine without expostulation, when it seemed to be injuring the child; or, on the other hand, refused to give the child medicine which was beneficial, because the child did not like it? As the doctor needs to listen to the experience of the mother, and the mother to carry out the advice of the doctor, so do parents need to trust the children's teacher in matters of which an educational expert can form the best judgment, and teachers, like doctors, need to profit by the experience of the

parent, and should be willing to give reasons for their advice, knowing that the more their patient understands, the more intelligently will he carry out the directions given.

But how shall this be? Well, as a quickened sense of the supreme importance of education has been awakened in teachers, so has it in parents. But mothers cannot in these days lead quiet lives, and devote themselves to the home as they once could. The multiform external activity, which we have noticed among women workers, has its good side even as regards family life, for the family that lives for itself alone can no more lead a healthy life than the individual, but it has its dangers too. We all know how great are the claims of society, of culture, of philanthropy, right in themselves, yet sometimes displacing a higher claim. All of us, specially mothers and teachers, want to know how to conciliate the rival duties, lest the words should be said to us, "Thine own vineyard hast thou not kept".

It is of the very greatest importance for the child's character, that there should be complete co-operation between home and school. Consider the difference between home and school discipline; I may say that the home government is personal—there is not strict system and unvarying law. A girl comes down late to breakfast; or she is in the drawing-room when she should be in the study. She chooses friends and books that the mother disapproves, and there is irritation: the mother expostulates, the child is provoked. In the school on the other hand there is inexorable law, the consequence of neglect must be borne, there is no scolding, no entreaty. It will be an advantage to the home to have a little more rule, and to the school to

have children brought up with some of the freedom which must be theirs one day.

The child who sees the mother yield up her own power to law, bearing inconvenience, denying herself pleasure, and what is harder still, denying it to her child, will learn to respect duty, and impose laws on herself.

Besides this, there are ways by which fuller co-operation may be brought about. All professions find the advantage of meeting together to discuss their special problems. There is the Teachers' Guild on the one hand, and a Parents' Educational Union on the other. I have tried in vain to bring these together here. The guild is too professional for the parent; it does seem, however, as if the newly-established Child Study Society might unite both. A fair number have joined the child study evenings and given valuable help. In the *Pedagogical Seminary* for July, 1897, which is a mine of valuable suggestions for parents and teachers, there is an interesting account of the way in which the school and the home have worked together in solving educational problems.

The movement initiated by the able president of Clarke University, U.S.A., for founding a science of education upon systematised observation is a most important one; it will help to build up a true philosophy upon facts, and so save us from the aimless talk of mere theorisers who want to square circles, or to discover the philosopher's stone.

A good library, accessible to parents and teachers, which should contain books and periodicals not written exclusively for the profession, would be a great help. A niche in the general school library might perhaps be reserved for parents.

I have found much advantage from throwing open such lectures as I give in our large hall to parents and Heads of Houses. Many come to a scripture lesson given to Division I. collectively, and to literature lessons; some have joined our Plato or Browning readings, and occasionally have been present at lectures given in the training department. It is quite usual for mothers to accompany their daughters to the "Cours" in Paris. Of course parents could not attend schools *ad libitum*, but it need not be quite a *terra incognita*.

The head mistress in many schools sets apart certain hours for seeing parents; could it not be arranged that each class teacher should have some free time for seeing parents of her pupils, especially at the beginning of a new year? There is much to be said against evening visiting, and ordinary social meetings would be useless for the purpose of discussing difficulties. It is a great matter to substitute candid discussion for fault-finding to third parties; we shall not always agree, but we shall learn to respect one another's opinions, to understand one another's difficulties, and to work more effectually with one another in the difficult, sacred task committed to us. So far from finding parents generally anxious to interfere, I have difficulty in persuading them that I earnestly desire they should tell me of anything that needs attention.

The essential thing is that there should be co-operation and a sort of concordat between the school and the home. Certain rules agreed on :—

1. There must be a room for study and certain hours fixed for home work, which must not be altered without grave reason.

2. Late parties, bazaars, theatricals, etc., etc., must generally be allowed only in the vacation.

3. No absence from school, no coming back late, no excuses for unprepared lessons should ever be permitted, except for some very sufficient reason—never because pleasure was preferred to duty.

4. If parents and teachers differ, that difference should be discussed by neither in the presence of the child.

5. Parents should take interest in the school work; ask to see the written work; get to know the teachers and friends of their children; attend lectures, if possible, and supplement school lessons by home reading; perhaps join some common society, *e.g.*, Teachers' Guild, Parents' Educational Union, or Child Study Society.

6. Teachers should invite and welcome any communications from parents, should try to know something of the home life.

7. Submission should be required in things lawful from the beginning, and the reins loosened as children grow up: the reverse method is fatal.

8. Parents should not allow the children to read indiscriminately. Distaste for intellectual work is created by exciting novels; irreparable injury is done to the moral nature by letting children enter into sympathy in imagination with the base and impure.

9. The only safeguard is to provide in the home good literature, and to read with the children. Especially should holidays be utilised as a means of learning how to spend time rightly in after-life, and some regular and independent study undertaken during long holidays.

10. Health should never be sacrificed to fashion. High heels, tight-lacing, etc., etc., should be absolutely impossible. Woollen clothing, a carefully studied dietary, regular hours, sufficient sleep, well-ventilated bedrooms, daily baths, proper artificial light, suitable seats and tables, all these things which are studied in boarding-schools should be considered also in the home. Care should be taken in avoiding infection.

11. In planning the studies and life-work of children, parents and teachers should be guided, not by the consideration of what they want the children to be, but of what they are; the special gifts of God are to be specially cultivated, and both should ask, "Lord, what wouldst Thou have me to do?" Pascal's

father forbade mathematics. Some parents insist on music unwisely.

12. Especially should parents use Sunday rightly; the religious instruction of their children may be given at school, but the home reading has much to do with this, and the example.

13. Children should have a regular allowance of money from quite early years, and be trained to spend it rightly, and to keep accounts.

14. Should it be impossible for the home supervision and training to be carried out in harmony with the day school, either a private governess should be engaged, or the children sent from home as boarders.

SECTION II.

THE MORAL SIDE OF EDUCATION.

By LUCY H. M. SOULSBY, of the Manor House School, Brondesbury Park. N.W., late Head Mistress of Oxford High School.

> Lord, with what care hast thou begirt us round!
> Parents first season us: then schoolmasters
> Deliver us to laws; they send us bound
> To rules of reason. *George Herbert.*

MANY girls leave college with a vague idea that they had better take up teaching, because it is the only way of earning a livelihood for which they are in the least prepared. Unfortunately their preparation, too often, consists merely in having been taught themselves. Having eaten dinners is some preparation for the career of a cook, but not much; and these young teachers may perhaps find an educational cookery-book useful! The comparison does not hold good altogether, for almost every woman has the instinct of motherhood in her, which makes her more or less a born teacher, while it is only a few who are born cooks. Still, every young woman finds help in talking to an older one, who has had the same work, made probably the same mistakes, and has found a practical way out of them. We all value practical experience; what else is training but practical experience systematised? But it is not every young teacher who has an experienced friend at hand, or who can afford to be regularly

trained. It is hoped that this book may be, in printed form, such talk as she would welcome had she an experienced friend at hand.

The high pressure at which most people live is not favourable to much individual thought. A girl at college may well feel that her three years there are the great opportunity of her life for taking in the ideas of living leaders of thought, and for making friends with her equals. She is hardly to be blamed if every moment of her day is occupied with hard work, anxiety about her schools, and with the social amusements which are part of the education of college life. Still, this full and happy life involves a danger that should be guarded against, a danger lest the girl should be so much occupied in living her own life, that she has no leisure to stop and think out what should be the principles and the aim to guide her in moulding—as every teacher does—the lives of others.

The self-education of the teacher should include (*a*) Mental leisure.

The moral thoughtfulness, which Dr. Arnold demanded of his VI. Form, is the main requisite for a true teacher: no dexterity in imparting knowledge will make her an educator if this is lacking. The study of character and practical casuistry, though not on the list of "final schools" at any university, is yet the most indispensable of all "schools" for a teacher. It may well be that her opportunities of gaining knowledge of the world are restricted by her circumstances. College is her furthest flight, and this is a world of its own with the disadvantage of being disproportionately peopled by too many of one generation. Under ordinary conditions of family life, the rising generation is kept

(*b*) Knowledge of the world.

in touch with maturer ideas by a fair proportion of uncles and aunts, as well as by fathers and mothers; but, at college, the niece's world is narrowed (though this is not usually the light in which it strikes them) by the exclusion of aunts! College undoubtedly gives much knowledge of character to a thoughtful student, but its experiences need to be brought into true proportion by comparison with the larger world beyond.

There are many novels, essays and biographies which afford a good substitute for knowledge of the world to the girl who has a quiet home, besides the many books bearing directly on the study and formation of character, which every teacher and mother and elder sister should read. Such are: Sir Henry Taylor's autobiography and letters, *The Memorials of Miss Charlotte Williams Wynne;* all Sir Arthur Helps' works and Mr. Hutton's essays. Miss Mozley has written two volumes of essays which are full of delicate insight into character: one, *Social Essays*, reprinted from *The Saturday Review*, can only be obtained second-hand, but her *Essays from Blackwood* are still in print. Sir Henry Taylor's *Notes on Life*, and Lord Chesterfield's *Letters* (selections) will also be found very useful. Among the more directly educational books, attention should be directed to *L'Education Progressive*, by Madame Neckar de Saussure; *La Famille*, by the Comte de Gasparin; *L'Education des Filles*, by Fénélon; *L'Education des Mères de Familles*, by Aimée Martin; *Principles of Education, Notebook of an Elderly Lady, Youth and Age* (all three by Miss Elizabeth Sewell); Miss Yonge's *Womankind*, Miss Mason's *Home Education*, Miss Shirreff's *Intellectual Education*, Mrs. William Grey's

Thoughts for Girls on Leaving School, and Mr. Sidgwick's *Form Discipline*.

Nothing can replace in a teacher the study of individual peculiarities of character: the motives, the special hindrances, the growth of each child in her class must be studied and individually met, if she is to rise to the true level of her work.

(*c*) Insight into character.

This is assuming that the teacher feels the full responsibility of being put in a position where, by the way in which she teaches French, or mathematics, she can help or hinder the spiritual growth of each of her pupils. But even supposing that this overruling underlying motive of every true educator be put aside for the moment, and we consider only the smaller question of more or less success in imparting knowledge—still, this very success (other things being equal) will lie with that teacher who has the insight into the peculiar disposition of each child, who can bring to bear on each nature the motives which appeal to it and who can foresee and obviate the difficulties, which vary in each child, according to its mental, moral and physical equipment. In all ways scholastic success is furthered by seeking first something higher still. A great educator used to say: "If you teach one boy arithmetic only and another boy arithmetic and religion, other things being equal, the second boy will beat the first in arithmetic, because his nature is more widely developed".

Moral responsibility of the teacher.

But it may be thought that this is asking more of teachers than can be fairly expected. A girl who has taken life from the outside, with a comfortable, one might almost say, "wholesome" disregard of motives and such-like

complications, who looks forward to giving her lesson in a special subject, and to then being free to be as untouched by the "malady of thought," as absorbed in games and the amusements of life, as was rightfully her state at fifteen, may well feel that she is not prepared to enter on teaching as a career combining the responsibility of doctor and clergyman. If so, let her consider carefully before she adopts the teaching profession.

A teacher is as much morally bound as any mother to consider the principles of the inner life, to think out a clear conception of her moral and intellectual aims for her children, and as such bound to feel constant moral responsibility for what she does, and is, and for how she improves herself.

It is true we see both mothers and teachers take up their responsible positions in life without this moral thoughtfulness, and we sometimes see the children turning out well in spite of it. But the fact that Nature has wonderful curative and educative powers, does not lessen the personal responsibility of those who should have used art to improve nature. Children have been known to recover from illness in spite of a doctor's mistakes or neglect, but we do not therefore condone the doctor's carelessness.

If a girl is not prepared to take up the teaching profession from its deepest, *i.e.*, its only true side; if she wishes to remain thoughtless, then let her choose some other form of livelihood—millinery, clerkship, gardening—where outward diligence will fairly meet all demands, so far as mere honesty to her employer is concerned.

But let the teacher who shrinks from moral responsibility remember that, in this side of her work alone, is to be found permanent interest. All mechanical

work must pall sooner or later, and teaching is little better than mechanical, if it is of the external kind. Elementary teaching is often called mechanical, because its subjects and their extent are very limited, but Latin grammar in the high school is, after a time, capable of becoming quite as dull as English Grammar in the elementary school. Or, rather, both are equally capable of being interesting if, and only if, the teacher cares supremely for what is more important than any grammar, the development of each child who learns from her.

For, no matter how large the class, the true teacher must study and respect the individuality of each member of it. Though her class may pass a most successful examination, yet, in examining herself, she must mark down (against herself), as a failure, the name of each child who has remained to her merely one of the crowd. The eyesight, the hearing, the spine, the headaches, the home surrounding of each child, should be known to its teacher, and should modify the demands made upon that child.

The teacher needs (*a*) Knowledge of the circumstances and character of each pupil.

Curvature of the mind is far more common than curvature of the spine, and the teacher must have keen intellectual sympathy with each child's individual mental tangles. She must clear the ground of harmful stumbling-blocks, and yet leave enough to exercise the mental muscles. Surely if the difficulty of a task can fire enthusiasm, the teacher should burn with zeal.

The moral temperament of each child is an even more complex study than the mental peculiarities; praise, for instance, is a tonic for one and poison for another. The teacher

(*b*) A right judgment and presence of mind.

must have presence of mind to criticise on the spur of the moment, with due regard to the child's moral digestion, to the abstract question of justice in the class as a whole, and to maintaining a high, and yet not depressing, standard of work. One child requires to be repressed and one to be encouraged to do itself justice. One child has thoughtful difficulties which need sympathetic unravelling; another suffers from mere inattention, and requires decisive pulling together.

It stands to reason that, to appreciate all these shades of character and to satisfy the needs of each, in such a manner as not to waste the time of the class (and not to sin against the code of rough and ready justice, to which the childish mind, quite rightly, owns allegiance), is a very delicate task, and involves much of that moral thoughtfulness which is the foundation of a good teacher.

(c) Self-mastery.

One reason for the supreme importance of this quality is that it not only means insight into others, but also involves self-mastery without which no *educative* control of others is possible. *Forcible* control is quite possible to a severe or hot-tempered nature: children are easily cowed, but they do not learn to control themselves if they are subject to this martial law. If a mistress finds that her children are good with her and tiresome with other people, she may rely on it that her own discipline is defective. Probably she has allowed personal affection for herself to be an admissible motive for good conduct, whereas insubordination would be almost better for the child! This last would be repented of, in time, as a fault, whereas many a girl goes through life mistaking impulse for principle, because at school, obedience "to please Miss So-and-

so" was accepted, as equivalent to obedience to duty. It may be that the teacher has mastered the children's tempers by dint of having a worse one herself; if so, the children will recoup themselves, for the enforced restraint of her presence, by licence in her absence; whereas the control exercised by a serene, equable nature develops the element of self-control in the child, and also a sense of self-respect which tends towards good behaviour when with other teachers.

This is one great reason why teachers should make it a matter of principle, as well as of worldly prudence, to avoid overstrain. You sometimes hear a young teacher boasting of the tax which she lays on her constitution; she tells it, half as a grievance that she should have so much to do, half in triumph that she is so peculiarly constituted —just as poor people exult in ailments that mark them out from the common herd! But these excesses of work (whether caused by bravado, or by bad management, or by an ill-informed conscience) are not a luxury of which she herself can defray the expense; the cost is really borne by her home people, by her fellow-teachers, and, worst of all, by her class, who all suffer from her overwrought nerves—in plain English, from her temper. I say, worst of all her class, because she may be a means of wholesome discipline to the other sufferers, but she does distinct moral harm to the children. And do not let her imagine that heroic efforts to control outward signs of temper will qualify her to be a teacher: children are acutely sensitive to atmosphere, and suffer even more under one who is elaborately controlling her temper, than under one who frankly loses it and then is serene again. If a teacher

The teacher must avoid (*a*) Over-strain.

is to be worth her salt, she must have no temper! She must be of a serene, sunny temperament which enjoys the children's presence, and her anger, when needed, must be of the impersonal kind which Fuller describes as one of "the sinews of the soul".

(*b*) Injudicious reproofs.

Of course scolding has to be done, but there should be no connection of ideas in the child's mind between a merited scolding and the teacher's temper. Mr. Arthur Sidgwick's essay on *Form Discipline* gives the whole principle of the matter, but there are three suggestions I would like to add for the use of women teachers. One I take from Mrs. Beecher Stowe's book on *Little Foxes*. She there describes two households in each of which a young servant is being trained. In one, the mistress looks at the dinner table and remarks that the salt is not what it should be: in the other, the mistress, on coming to inspect the table, exclaims, "Why, Sally, how bright your silver is, and you have remembered everything to-day; the only thing that is not perfect is the salt, and I am sure you will always look specially at that in future". There was no comparison between those mistresses as to success in servant-training, and probably the teacher who blends praise and blame will cultivate a hopeful energy of self-improvement in her children, unknown in the class taught by one who coldly points out faults and passes over merits.

My second suggestion is, as the Spanish proverb says to authors: "Leave something in your inkstand"; underscold rather than overscold. A woman usually has a power of statement that makes her take an artistic pleasure in putting her case completely and

convincingly. But children have a fine sense of justice (until it is blunted by contact with the world), and the culprit who undergoes one of these comprehensive scoldings is apt to feel that full measure for the crime has been meted out and so she thinks no more of it. Understate your case and that same sense of justice will make her say to herself all that you leave unsaid, and this self-condemnation will probably be the most effectual part of the scolding. At all events, very little harm comes from scolding too little, and irreparable harm often comes from scolding too much. When the nail of reproof is once in, every additional blow of the hammer tends to loosen it.

My third suggestion is, avoid scolding as much as possible when you have reasonable cause for supposing your own nerves likely to be on edge. There are times, *e.g.*, the end of the summer term, when you are not likely to see things in true proportion: at such seasons distrust your own power of judging, and look the other way as often as possible, for blunders are liable to be more severely dealt with in July, than crimes in the fresher air of September!

Let us now pass on from the question of the state of mind desirable in a teacher, to consider the aim and possibilities of her work with the child.

The teacher's aim should be health —physical, mental and moral.

During the whole of school life, a girl's physical frame is so entirely in the making that considerations of health should outweigh everything else. She is building the house in which she is to live all the rest of her life, and it is far more important what sort of house she builds than how much she employs herself with the various occupations that she

can pursue at leisure, throughout her tenure of this "house". Any study can be followed up in later life, if health demand its cessation during these growing years, but no after-study can repair early impoverishment or damage of the physical frame.

Of course it stands to reason that the object of this house-building is that the householder may be unhampered in after years and able to lead a large and noble life. We should have small value for the physical frame if it were tenanted by an imbecile mind, or a nature without moral sense. Therefore, when we say that the body is the main consideration in youth, we do so because soundness of body is the surest means of securing moral and mental soundness. Fortunately, body, mind and spirit are so intertwined that what is good for one is usually good for all. We can hygienically insist on good hard mental work, because it is essential to bodily health that there should be routine and effort and concentration of mind. We can insist on self-denial and self-control, for these are as essential to bodily health as to spiritual. The teacher who believes herself to be an educator, not merely an instructor, finds all the apparently conflicting elements of a peculiar case, wonderfully harmonised by giving predominance to the moral aim. If your first object in life is to increase a child's chance of becoming an even-tempered Christian woman, you will not let considerations of examination successes tempt you to allow overstrain ; while, at the same time, you will be inexorable in demanding, as moral training, the steady effort and the willing work, which will probably bring the successes.

Do not let the day school teacher feel as if undue

burden were being laid on her, when we speak of the whole future of the child as thus depending on the teacher's breadth of aim. It is difficult to place any limit to the possibilities of the teacher's influence, even at a day school, where she only has the child for four hours out of the twenty-four. It is true that the mother and the home, during the first six or seven years of the child's life, have determined the main elements of its nature; but in dealing with these elements, at a later stage, there are endless possibilities of combination, of encouraging some and repressing others. Though we teachers do not, as a rule, get children at the early stage when most can be done with them, yet in schoolroom days we find their brains still plastic enough for us to work cheerfully and hopefully, in the teeth of the many hereditary evils which would crush our efforts, were it not that we believe education to be able to cope on fairly equal terms with heredity. Every time we induce children to make an effort for the right, or to think accurately, we make a groove in their brain which serves as a railway line along which thoughts of the same kind will pass more easily next time. Every time we excite a wrong feeling—irritation, obstinacy, irreverence, or allow a deviation from some acknowledged standard of duty—we lay cross lines of rail in the wrong direction, which will hinder their progress in the right path, now and in the future.[1]

The power of the teacher in moulding character.

The art of concealing art is nowhere more necessary than in this incessant watchfulness required of the

[1] See Miss Mason's *Home Education.*

teacher, as it is very bad for the child to feel that its little world turns on its own moral and physical well-being. The chief good of school lies in the uniformity of the routine, in the absence of special exemptions; it rests and braces the child to feel under inexorable Laws of Nature which know no favourites.

Bracing influence of school (*a*) resulting from uniformity of treatment.

At the same time, while we in our larger world feel under fixed laws, we yet believe in a special providence which arranges for our welfare, even though we are unconscious of its action; the teacher should play the part of unseen providence to the child.

It is perfectly possible in a high school to consider each individual girl, and to arrange matters more or less for her interests, though this possibility rests on the fact that exceptional cases are not proper subjects for high school education. Even an ordinary child has her peculiarities, which should be allowed for, but, in the main, it is the regularity and uniformity of the school routine which make the most valuable part of her education.

The child learns at school to be unself conscious, to appreciate others; to bear being surpassed without depression, and to stand success without undue exultation; and she learns these valuable lessons mainly through standing on the same platform with her companions, and having to fight on equal terms. When parents beg that some of the subjects taken by the rest of the class may be excused to their child, they do not realise that, by interfering with the equal terms of contest, they destroy half the value of school life. The value of a high school lies not merely in its instruction (though this is probably

(*b*) Wholesome competition.

given by a trained specialist in each subject), but even more, in "the give and take" on equal terms which teaches a child to know her own powers and her own weaknesses. A child subject to undue self-appreciation, or self-depreciation, would probably gain much from going into the miniature world of a high school, as would also the dreamy child; in the latter case particularly the value of the school lessons lies in their difficulty, and children suffer if they are excused or helped with a lesson because they have failed to understand the teaching in class. Instant concentration of the faculties on the matter in hand is one of the most valuable lessons learnt in school, and to repeat information, or explanations, to the absent-minded child, is to encourage a fatal weakness. Of course the blank in the child's mind (which makes a pitying mother beg that the lesson may be excused) may be caused by irrelevancy or indistinctness of voice, or of mind, on the teacher's part. But if three-quarters of the class have followed the lesson, it may be safely taken for granted that effort and practice will bring success to the remaining quarter; a success which will mean not merely the knowledge of the Euclid or geography in question, but victory over a habit of mind that, if unchecked, will neutralise any talent the child may possess.

(*c*) Concentration of faculties.

The child's efforts after concentration of mind need careful co-operation on the part of the teacher (who, from her own carelessness, is apt to indulge the child's carelessness), whereas the equally valuable qualities of diligence and perseverance are almost evolved of themselves by the competition of any school which has a good work-

Dangers of school worldliness.

ing spirit. The teacher needs to be even more alert in counteracting the mistaken forms which school diligence is apt to take, than in rousing the spirit itself. Emulation, eagerness for marks, putting school opinion before those of home—all these are very real dangers. The better the school, the more acute the danger, and the more need is there that the authorities should act as a drag on the coach. Emulation is a natural quality in the child and a very useful one to the teacher; but there is great danger in its degenerating into personal rivalry. Something may be done to soften this spirit of competition by setting before the children a fence which all may leap, not a throne which only one can occupy. The fence can be as high as you will, but if the opportunity of clearing it be open to all, the class will exult in the number of successes, without any feeling in the many of personal loss involved in the gain of the few. "Marks" can be so arranged as to obviate the temptation to personal rivalry which is often supposed to be inseparable from them. When the weekly marks are added up, letters are in some schools assigned, according to the percentage of marks gained, arranged in decades. The exact number of marks is not brought before the child, but only the question to which decade she belongs. A red A denotes 90 per cent., a black A 80 per cent.; B means 70 per cent., and so on through the alphabet. Every member of the class who deserves it can attain the "red A". The same system can be pursued in prizes; all who reach a certain standard of marks in term work or in examinations, or in both combined, can gain one. Thus

Marks do not necessitate rivalry.

esprit de corps to some extent takes the place of personal triumph—the whole class is proud of its number of "red A" members and prize-winners, instead of suffering from the temptation to feel a little bitter, which must exist when there is only one place of honour to be had.

The value of moral and religious lessons in school is especially great because of the almost universal disposition on the part of girls to consider home exhortation as nagging. What is said in a school lesson goes home to the conscience with no friction, because the teacher cannot have known of that last peccadillo at home, and the mother is not at hand to look the fatal phrase, "I told you so!" Advantages of religious lessons in school.

Mothers need not feel that the school lesson displaces theirs—rather it enforces what they say, since the child probably listens with increased interest to what they say when it is unconsciously echoed by an outside authority. (*a*) They reenforce home teaching.

It is very difficult at home not to omit certain sore points in these moral lessons, for fear of seeming to aim at special children. In a series of lessons at school, this difficulty is obviated and the victim can feel that the arrow has hit home, without the indignity of being watched by home eyes to see if it has taken effect. (*b*) Avoid the danger of personalities.

It is easier, also, in speaking to a number to take larger views of life and its duties, than might seem suitable in any individual family. Social duties, good citizenship, high ideals of future usefulness can be held up to elder girls at school as a part of religion; while such faults as partisanship, political or otherwise, narrow-minded- (*c*) Give large views of duty.

ness, family selfishness can be discouraged without any danger of personality.

These moral lessons should serve a distinct purpose in the school by imbuing the girls with high ideals; the fact of belonging to a large public body such as a high school should assist them in assimilating wider ideas of life. But it must not be forgotten that moral lessons in no way supersede the necessity for definite religious instruction; abstract ideals will have little power against future temptations unless they are supported by sound Biblical knowledge and religious belief.

(*d*) Put school discipline on the true basis.

From one point of view, it may be said that parents should feel responsible for this instruction, but surely the teacher would not be content to give up such a hold on the child as is furnished by the religious lessons. It must be almost impossible to maintain real control over the tone of the school, if the deepest part of the child's nature is left outside the school's jurisdiction.

(*e*) Give religion its right position in the curriculum.

Besides, though the responsibility and the pleasure of this branch of education do belong primarily to the parent, yet, when the claims of school eat up so much of the day, it is very hard for the mother to get enough time to deal fully with the subject. Also, the better the school and the more fully it employs the mental faculties of the child, and wins its allegiance, the more important it is that such a great authority in the child's world should proclaim itself supremely interested in this branch of learning. Children often have to learn music at school, merely because they only attend to their practising when it is done for a school authority. Much as we may wish home to be supreme in all cases,

we must recognise that children often go through a phase in which they yield more unquestioning submission to school rules than to home wishes, and give keener energy to school lessons than to the extra ones devised by the mother, and secretly resented by the child as an unjust addition to its burden.

Besides, it is possible there may be homes, we will hope they are rare, where religious teaching is not sufficiently attended to; certainly our better-class children are often more ignorant of their Bibles than those who have been to a good Sunday school.

Let us assume, therefore, that the school must have a definite and fairly complete course of religious instruction, including Biblical and moral lessons; church schools would of course add doctrinal and prayer-book lessons.

But the Bible lesson is not only a subject in the curriculum, it should be a leaven in the school. This can only be the case if the children feel that, in spite of all imperfections and shortcomings, the Bible lesson really is the truest outcome of the teacher's own nature, that it is to her the most interesting lesson of the week, bearing on the whole of life, instead of being an isolated subject in one pigeon-hole of her mind. (*f*) Leaven the school life.

Let us take it as a principle that these lessons should have the first and freshest hour of the morning given to them, that they may be felt as a continuation of school prayers, as a further consecration of the day, not as a mere lesson to be sandwiched in with French and algebra, as if all were of equal importance.[1] Let the

[1] If the exigencies of the time-table forbid the first hour, then let it be the last.

children realise that religion comes first in arranging a time-table, and that no pressure of examination work can be taken as a valid excuse for curtailing these lessons. Children sometimes think that because no marks are given for divinity it will pay to get an excuse for this, and to devote the time to lessons which tell in their weekly class-list. This is only a crude force of a temptation common to every stage of life, and it would be one of the most valuable of all school lessons could such a child be taught that religion, if real, must come first in Monday's lessons as well as in Sunday's services.

Subjects for Bible lessons.

It is easy enough to find matter for the Bible lessons;[1] the life of our Lord, a three years' course of Old Testament history, as arranged in Mr. Glazebrook's three volumes; the life of St. Paul, considered as the setting of his Epistles, and including a general survey of each of those Epistles; a special study of any one of the Prophets, giving the gist of his message, viewed first in the light of his own times and local surroundings, and then considered in its relation to our own times; the women of the Bible; the Jewish feasts and ritual; any one of these courses will provide interesting matter for a year's lessons.

A very useful book has recently been written called *Ad Lucem*,[2] which gives Old Testament history, the Gospels, the Acts of the Apostles and Church history up to the present day. Its object is to show the his-

[1] Full and detailed suggestions on this subject will be found in Mr. Bell's invaluable little book on *Religious Education in Secondary Schools*.

[2] By the Rev. A. B. Simeon; published by Wells Gardner.

tory of the world as bearing on the Incarnation, and it is enabled to cover so much ground by selecting and emphasising such facts as bring out this point of view. It would be interesting to children of about fifteen, and useful to any teacher, by helping her to focus her own teaching.

Probably all teachers will say the difficulty lies rather in how to treat this vast stock of material. There should be no difficulty in making the children feel that the Bible is the most interesting book in the world, quite apart from its religious importance. Requisites of a Bible lesson.

So many books on Eastern manners and places are within the reach of teachers that they should not be content till their own conceptions of the Bible scenes and characters are as vivid as Tinworth's terra cottas.

Children have much in common with the old Scotch woman who was so shocked at what seemed to her irreverence in Dean Stanley when he tried to persuade her that Jerusalem was a real place which he had visited; it is a new light to them to be made to realise that Bible heroes and places are as real as those in English history. Doing this arrests their attention, and they go on to perceive that the temptations and virtues of those days were also like our own, that even the minor Prophets, whom they have avoided as utterly alien to their world, speak straight to ourselves in their warnings about wealth and labour and luxury. (*a*) Vividness.

Until we make Bible lessons practical for ourselves and for our children, we must not be content: in old days the Bible was used only as a storehouse of isolated texts for personal application; we realise now that due reverence for the Word (*b*) Practicality.

of God requires that we should study it, and teach it, as exactly and reasonably and vividly as we do any other history and literature, but we must not forget that if we stop here, the old-fashioned unintellectual method of study infinitely surpassed in wisdom our modern cleverness. Unless our lessons make the Bible more profitable for doctrine and reproof, for amendment of life and instruction of manners, they are failures, no matter how much critical and geographical learning has been brought to bear on them. Perhaps each lesson need not have a special ethical or spiritual bearing (though it is a pity if it has not), and we should beware against overdoing our moral instruction. A child's mind is like a narrow-necked bottle, and we often pour in too much at once.

(*c*) Devoutness.

Especially is this the case with illustrations; the teacher has had their use so inculcated that a Bible lesson is too often a string of anecdotes and pictures in which the central idea is hopelessly lost; one truth, one picture, and one illustration are as much as any young child can grasp in one lesson, and children of a larger growth would often gain more if teachers were more economical in their explanations.

(*d*) Simplicity.

Keeping the spiritual aim in view would assist in dealing with some of the critical difficulties which beset a thoughtful teacher. It is most important not to give mature food to an immature mind, or to bring before the child, who has not realised any difficulties, the critic's suspension of judgment, which is such a comfort to the teacher. But though we should avoid giving an impression that facts and authorship are moot points, still we can avoid putting up stones of stumbling which will afterwards

(*e*) Careful treatment of difficulties.

have to be cleared away. Children need the old stories told in all simplicity, the stories of the childhood of the race, but if we keep before them "the one far-off Divine event," towards which all those stories pointed, if we teach them Jewish history in the light of the Divine education of the human race, instead of treating the Flood and Jael and Joshua's wars, etc., as finished episodes which stand on their own merits, so to speak, surely then there will be little or nothing in the best modern lines of thought to upset their faith, and much to enrich it.

To sum up shortly, the following are the main points I would seek to impress on a young teacher, in considering the moral side of education. Summary. First and foremost the heavy responsibility attached to the teacher's office—an office which combines the functions of clergyman, doctor and instructor. Next, the personal qualifications required of the teacher, holiness, serenity, insight into character, knowledge of the world; then the aims of the teacher's work, the building up a sound mind in a sound body, by the help of the good habits arising from right conditions of school life, most of all by the help of the Bible lesson, which must be the inspiration of the whole school course.

I should like to end by quoting some words of William Law, the great mystic of the last century, which put before us the true ends of education. In his *Treatise on Christian Perfection* he says: "Show me a learning that makes man truly sensible of his duty: that fills the mind with true light: that makes us more *reasonable* in all our actions: that inspires us with fortitude, humility and devotion".

SECTION III.

CULTIVATION OF THE BODY.

By JANE FRANCES DOVE, Certificated Student of Girton College, Cambridge, 1874; Head Mistress of Wycombe Abbey School, Bucks; previously Head Mistress of St. Leonard's School, St. Andrews, N.B.

> So every spirit, as it is most pure,
> And hath in it the more of heavenly light,
> So it the fairer bodie doth procure
> To habit in, and it more fairely dight
> With chearefull grace and amiable sight;
> For of the soule the bodie forme doth take;
> For soule is forme, and doth the bodie make.
>
> *Spenser.*

AS the object of school life, or rather of life at school, is not merely teaching but education, and as education, whatever the true derivation of the word may be, means the gradual drawing out and development of all the faculties of which the human being is capable, we shall speak in this chapter not of the "teacher," but of the "mistress" as the person who in school life takes the place of authority analogous to that of the parent in the home, and upon whom falls the responsibility for the time being of seeing that a due balance is being maintained in the development of every faculty. The importance of this harmonious development of the powers is manifest. We do not desire girls to be brainless athletes any more than we wish that they should be delicate or stunted blue-stockings, and either of these exagge-

The mistress as educator.

rated types is made doubly deplorable if, as sometimes happens, there is a deficiency of moral power.

The most important conditions for health are first of all a wholesome environment; secondly, wholesome occupation for the mind; and thirdly, proper exercise for the body. Health conditions.

The environment will be discussed later.

The occupation of the mind will also come chiefly under the head of mental training, but here it may be desirable to notice that the mind must receive much of its training through the exercise of faculties other than the intellectual. This truth is of course the foundation of the whole idea of recreation, recreation consisting much more in change of thought and a difference in the objects on which the attention is fixed, than in the particular form of exercise through which this object is attained. It is for this reason that games of all kinds are so much more valuable than mere walking under ordinary circumstances, because walking is so purely mechanical, especially when exercised for limited periods among well-known surroundings, that the mind continues to occupy itself with the thoughts, and possibly with the intellectual problems, upon which it was before fixed. Better than walking, as both an exercise and a recreation, I should count riding, rowing or bicycling. In riding and bicycling there is the great interest of managing the horse and propelling the bicycle, the exhilaration and quickened circulation produced by passing rapidly through the air, together with the refreshment gained through the eye by the contemplation of new and varied scenes, Meaning of recreation. Some forms of recreation more valuable than others.

especially if they be beautiful. Every form of occupation or exercise that will keep girls in the open air is for that reason alone valuable, because there is no bodily want so imperious as the necessity of breathing fresh, unvitiated air; but as a true recreation the first position must undoubtedly be given to games, because in them there is always a special interest upon which the mind must be concentrated, and which therefore entirely prevents the possibility of the thoughts dwelling upon the subject of the last lesson, and sends the girl back braced and invigorated to overcome the intellectual difficulties that may be required of her. I think I do not speak too strongly when I say that games, *i.e.*, active games in the open air, are essential to a healthy existence, and that most of the qualities, if not all, that conduce to the supremacy of our country in so many quarters of the globe, are fostered, if not solely developed, by means of games.

Games essential to a healthy school life.

I have said that games are essential to a healthy existence; of course I mean that they are so under the circumstances of school life. Without this proviso the assertion would be an exaggerated one. For I think if it were possible, with a due regard for the necessities of their training, to make girls cultivate a farm, or even do all the work of a large garden, or build a house, or make a road, the interest of performing a real work of utility, together with the exercise of the muscles and other faculties, would give the necessary recreation and muscular exercise; but the initial difficulty can hardly be overcome, *viz.*, that in building a house, or cultivating a farm, the exigencies of the work

Games give exercise.

must be considered rather than the training of the workers. Hence it is that games have been invented as a means of exercise in the open air, which will occupy varying numbers of players, which can be dropped and resumed according to the exigencies of the weather, varied according to the capacities of the players, which possess endless interests, develop numberless faculties, and yet which can be pursued upon limited spaces of ground, the possibilities of which for the purpose are never exhausted, and without the using up of valuable material. In fact for people who are to be intellectual workers, games are the modern adaptation of the old command "to till the ground," which, like other laws of a fundamental nature, cannot at any time of the world's history be neglected. Efforts have from time to time been made to carry out the injunction literally, as in the attempts of Mr. Ruskin to inspire Oxford undergraduates to try the experiment of road-making, or in the foundation of schools, which are meeting with a considerable measure of success, in which the boys perform, besides a certain proportion of indoor work, a good deal of agricultural, including woodmen's, labour. But for most schools, with their limited possibilities as regards acres of land, trees and materials, games are the only possible means of satisfying the need. These ought to be as joyous and spontaneous as possible, and therefore should be of every possible kind to suit different tastes. The joyousness and spontaneity are so especially necessary for girls on account of their extreme conscientiousness and devotion to duty. Boys, for all I know to the contrary, may perform

Games waste the minimum amount of material and can be played on limited areas.

their duties equally well, but they are rarely inclined to worry over them as girls do, and they have such overflowing animal spirits that they always contrive to find relaxation, by means of fun and activity of all kinds at odd times, which either does not come naturally to girls, or which, if indulged in by them as well as by boys, would make life an unbearable pandemonium for their elders.

Games for small numbers.

Let us then have games of all kinds; every game, with, I should say, the single exception of football, is suitable. Let us have lawn tennis, fives, bowls, croquet, quoits, golf, swimming, skating, archery, tobogganing, basket-ball, rounders and hailes, as many of these as can be provided for, and some at one season of the year, others at another. All these are useful, because only a small number of individuals, one or two, or at the most four, is necessary to make most of them enjoyable, and therefore they can fill up gaps of time when large numbers are not available for organised games. Let these games also be encouraged by means of tournaments and competitions held occasionally, and let prizes or challenge cups be offered for success in these competitions, and where there is a golf course arranged, let there be an autumn and a spring medal.

Their higher functions.

Games, however, have a much higher function to perform in school life than any I have yet mentioned. Here is a splendid field for the development of powers of organisation, of good temper under trying circumstances, courage and determination to play up and do your best even in a losing game, rapidity of thought and action, judgment and self-reliance, and, above all things, unselfishness, and a

knowledge of corporate action, learning to sink individual preferences in the effort of loyally working with others for the common good.

Women have plenty of devotion and unselfishness of an individual kind—that is to say, they can lose themselves entirely in the interests of their particular friends or of their husbands and children, but this personal devotion is quite compatible with what I may call family selfishness, and they may be, and often are, quite incapable of realising any interest whatever that is not bounded by the four walls of their home. The effect of this narrowness is to make their lives extremely mean and petty, and they have in consequence a deteriorating effect upon every member of their families and upon all society in which they mingle. It is true that the family is the unit which lies at the base of all national existence, and which forms the foundation stone for all teaching, moral and spiritual, but it is essential to remember that it is only a unit, and that an aggregation of such families or units forms a community, a nation, and that the members of a family are likewise citizens of kingdoms, political and spiritual. The woman who indulges in family selfishness is a bad citizen. To be a good citizen, it is essential that she should have wide interests, a sense of discipline and organisation, *esprit de corps*, a power of corporate action. Now the schoolmistress is the person who has the best opportunity of teaching these principles to women, and I would have her fully recognise her privilege and her responsibility. Men acquire corporate virtues, not only at school and at college, but

Necessity for the cultivation of corporate virtues.

almost in every walk of life; whereas comparatively few women ever find themselves members of an organised profession, and the proportion, even of those who have the advantage of college life, is still exceedingly small. It remains therefore for the school to teach them almost all that they will ever have the opportunity of acquiring of the power of working with others, and sinking their own individuality for the common good. The opportunity must be made the most of. Now girls are quite as susceptible as boys to the influences of school life. Therefore let us see that the influences are such as develop the best characteristics. Make them trustworthy by trusting them, open and straightforward by taking it for granted that they have nothing to hide. Give them beautiful surroundings; let the house be well managed and comfortable but not luxurious; satisfy every reasonable want liberally; do not keep their minds concentrated upon themselves by having a multiplicity of minute and irritating rules, but explain to them broad principles of conduct, and expect them to apply these themselves to the *minutiæ* of their own lives, pointing out patiently again and again where the girls' application of principles clashes with the interests of the majority. Thus the principles of corporate life are being imbibed every hour and minute of the day, though nowhere more completely than in the playground, and in the playground the large organised games, such as cricket, hockey and lacrosse, are the most useful for this purpose.

In the life generally.

By means of organised games.

Of course it is exceedingly difficult to obtain space enough upon which to play these games, but if a school

is to be a residentiary school at all in the full sense of the word, it must have several acres of ground immediately surrounding it. I forbear to specify the minimum number of acres, because though it may be desirable for the whole school to be able to play at one time every day, it is not essential, as it is possible by an expenditure of trouble on the part of the headmistress to economise both playground and schoolroom accommodation by arranging for each to be available in succession for the use of different portions of the school. A very useful guide, however, is to be found in the fact that, taking twelve well-known boys' schools, the average area of the sites is twelve acres for every hundred boys.

Area of playground.

There ought to be one ground levelled and turfed, about a hundred yards by fifty, for every thirty or forty girls. It is rarely that more than two and twenty, as in cricket, or twenty-four, as in lacrosse, are required for a game ; but out of the whole number there will always be a few who are "not playing games to-day," and the balance occupy themselves usefully with some of the other smaller games previously enumerated. The captain of the house or form, or whatever the subdivision may be that has the use of the "ground," must arrange that every individual of the forty is put down to play in the organised game three or four, or as many times as is possible, in the week. The half-holiday will naturally be the day upon which foreign matches are played, or home matches with other divisions, or scratch matches arranged by the captain of the games. The captain of games and the captains of divisions are of course girls, selected in the one case by the whole school,

Organisation of playground

and in the others by the girls of the division over which she presides. Of course if the number of grounds available is not as great as the number of suitable divisions, divisions must have grounds allotted to them in turn, and this reduces seriously the opportunities for practice. A good deal, however, may often be done with great advantage on a smaller piece of ground in practising for the game at the time in vogue, especially in cricket, where very useful coaching is given at the nets. Often special varieties of a game are developed by the local peculiarities of the only available spot for playing it. Every Etonian knows the correct shape for a fives-court, and how the peculiarity has been perpetuated from the balustrade of the stone stair in the quadrangle which leads to the chapel. The old Scottish game of hailes has likewise localised itself in the playground of the Academy, Edinburgh. It is desirable that there should be a mistress, whose special interest may be claimed by the girls in any particular game, and whose advice may be sought by the captain of games in the matter of answering challenges and providing the necessary apparatus. The captain should also be supported by another girl as secretary and treasurer, to collect subscriptions and keep the books.

Cycle of games.

The experience of many years has evolved the plan of choosing regularly one game for each term, and always keeping to it. Thus lacrosse might be taken in the September term, hockey in January, and cricket in May, and if all schools adopt the same plan, outside matches are then possible, and there are few things which tend so

strongly to keep up the *esprit de corps* of a school as meeting other schools on the playing-field.

There will be no difference of opinion as to the suitability of cricket for the summer term, but many schools play hockey in September, and carry it on for two terms. We have found, however, that there is not really enough interest in the game itself to keep up enthusiasm for such a long period, but inasmuch as it keeps nearly all the players in constant movement and requires the minimum amount of arrangement beforehand, and can therefore be begun at once on a cold day without loss of time, it is the best game for the January term, during which the most inclement weather of the year is usually experienced. Football being quite out of the question, on account of its roughness, we have fallen back upon lacrosse, a game which requires the same qualities of combination, obedience, courage, individual unselfishness for the sake of a side —a player who attempts to keep the ball instead of passing it being absolutely useless—and is full of interest on account of the various kinds of skill required, fleetness of foot, quickness of eye, strength of wrist, and a great deal of judgment and knack. The game of lacrosse well played is a beautiful sight, the actions of the players being so full of grace and agility. The skill required, moreover, is so great that the attempt to acquire it is a splendid training in courage and perseverance.

Lacrosse.

Hockey is so well known that it is hardly necessary to say much about it, excepting that it is a very great mistake to regard it as essentially a rough game. All that is necessary to prevent roughness is to have a strict

rule against raising the stick above the waist, an offence of this kind giving a free hit to the opposite side. Of course, hard knocks are sometimes received, but is there no value in the lesson of cheerful endurance that may thus be learned, and is it possible to enjoy anything good in life or even to live at all, without running some risk of bodily harm? Hockey has besides its special advantages which I have already mentioned.

Hockey.

As regards cricket, I am well aware that most real cricketers would laugh at the idea of girls attempting the game. I shall always remember the remark made by the head master of a public school, after watching the girls at play for some time with the keenest interest: "Yes, they will never make cricketers, but they are having splendid exercise in the open air". This, however, was some years ago, and the girls have worked hard and improved since then, and I venture to think that if the same kindly critic could again see their play he would think somewhat better of it. Indeed, I am often surprised at the real pleasure and approbation expressed at what even to me seems our feeble attempts. Granted, however, that the game in the hands of girls can never be quite the same game that it is for boys, it is still a perfectly safe game when played between elevens of tolerably equal strength. It is, in my opinion, quite unsafe when played by men against women, or even by big boys against little ones, but admirable from every point of view so long as boys play boys and girls play girls of corresponding size and strength. The amount of interest and variety in the game is unsurpassed by any other, and it is so well known

Cricket.

that an intelligent interest in its details can be taken by almost any one. No roughness is produced; all is gentleness and courtesy, combined with strength and determination. The traditions of the game are such that girls attempting to play it must throw themselves completely into it, and cannot allow themselves to give way to idleness and ineffectiveness. This is well illustrated by the remark of the captain of a team of ladies who recently played an eleven from a well-known school, and were beaten by them. She congratulated the head mistress, and said: "Your girls play like gentlemen, and behave like ladies".

It is unfortunate that, broadly speaking, girls cannot throw and that the bowling in a girls' eleven is apt to be lamentably weak. I have not been able to decide in my own mind whether this weakness is due to physiological disabilities or to the want of early training, but I am inclined to think the latter. It seems to be generally acknowledged in the nursery that it is of no use to attempt to keep the boys in strict control, that they must be allowed to have their fling, and create an uproar, and climb, and throw stones, but the whole force of the nurse's authority is usually exerted to prevent the girls under her charge from falling under the opprobrium, in nursery etiquette, of being "unladylike". I am the more inclined to this opinion, as I observe that where parents have the good sense to allow their girls the same facilities for activity, natural and necessary for the young animal, as their boys, the girls do learn to throw equally well, and attain the same easy gracefulness of movement which is natural to the untram-

Deficiency of early muscular training.

melled boy. Such parents, I grieve to say, are still very rare, with the result that not more than three or four per cent. of girls of fourteen have any idea of throwing a ball, and much less of bowling. This can scarcely be wondered at, seeing that "Sir B. W. Richardson lately stated that in his student days it was taught in all sobriety by anatomical authorities that the joint of a woman's shoulder was more shallow than a man's, so that she was almost sure to dislocate it if she threw a ball with force! Thus, comically, does preconceived theory upset the scientific vision." However, great strides have already been made by girls in acquiring skill in games, and much greater strides will be made in the future, to the enormous gain, not only physically but mentally and morally, both of women in particular and of the nation as a whole.

Great value of Swedish gymnastics.

We now come to the consideration of exercises, which though really recreative in their tendencies, are much less so than games, and first among these come gymnastics. Now no nation has more carefully thought out the subject of physical education than the Swedes, and at the Central Institute in Stockholm, under the superintendence of Professor Törngren, professors of gymnastics, both preventive and curative, are trained, who have a thorough scientific knowledge of their work, and can produce results in the way of physical training second to no others in existence. It has been my happiness for many years to watch the results of the work produced by one of the professor's pupils, and I cannot speak too highly of the work she has accomplished. The essence of her method is a syste-

matic training of all the muscles. She possesses a thorough knowledge of the structure of the human frame, both muscular and nervous. By a carefully thought out series of free exercises, supplemented by work upon the admirably devised Swedish apparatus, the muscular system of her pupils is thoroughly and harmoniously developed; and here let me say that, strongly as I believe in out-door games, I do not consider it safe to allow girls to indulge in them absolutely without restriction, nor at all, at least in the severer games, unless they are receiving systematic muscular training in the gymnasium and make a practice of changing all their garments as soon as play is over. For this reason, the time during which it is possible for girls to play hard is carefully cut down to a maximum of an hour and a half. Also, no exemptions whatever are given from gymnastic lessons. By this means hard games are made safe, whereas otherwise there would be constant danger of overstrain, and mischief might ensue which would perhaps not be apparent at the time, but might seriously endanger a girl's health in after years. There is nothing in my opinion more dangerous for young people than physical and nervous exhaustion. The harm is done in a gay, thoughtless moment, which may not be overcome for years. This care is especially necessary in the case of girls, both on account of physical organisation and because their muscular system has, as a rule, been so imperfectly developed in childhood. There is still another and very important reason. It has already been stated that girls are so very good and conscientious. One form which this

Severe games not safe without gymnastic training.

Dangers of over-exertion.

characteristic takes is that they will quietly attempt, and by pure nerve-force will perform, if the occasion seems to require it of them, feats for which their muscular development is entirely unfitted. This brings me to the reason why Swedish gymnastics are so greatly superior to the ordinary form of gymnastics, which used to be prevalent in boys' public schools and army gymnasiums. In this kind of gymnastics, the attention of the instructor is far too much occupied in making his pupils perform feats, many of which are of an acrobatic nature, rather than directed to the harmonious development of the whole body; hence, in some cases, the shoulders become abnormally broad and square, and other unsymmetrical effects are caused. In fact, the amusement of the pupils is considered rather more than their physical welfare.

Then, since every girl must appear twice a week in the gymnasium as long as she remains in the school, dressed in an easy-fitting costume, consisting of knickerbockers and tunic, the gymnastic mistress has every opportunity of noticing the physical development, and I have found that she very quickly detects even the slightest curvatures or other physical defects, and, with the parents' consent, can give curative treatment, which is very speedily efficacious in curing weak or crooked backs, stoops, displaced shoulder blades, sprains and other ailments. The mistress also gives the girls a good deal of useful advice, according to their several needs. She notices how they sit or what postures they take for different avocations, and tells them if they are wrong, and why they are wrong. She does not undertake any medical responsibility, but having had, so far as the bodily

Physical defects discovered at gymnastics.

frame goes, a thorough medical training, her work among a number of girls is simply invaluable, and no physical features that ought to be noticed escape her practised eye. It is well known to schoolmistresses, if not to parents, what a serious difficulty these physical defects cause in a girl's moral training. Nothing is worse for a girl than to be forced by circumstances to think much about her own health. Therefore, it is our part to save them as much as we can from having to direct their thoughts upon themselves more than is required by ordinary common-sense. Think how hard it is for a girl who has a weak back, and is ordered to lie down for certain hours in the day. She cannot lie and do nothing, and therefore attempts reading as being apparently the only possible occupation. The difficulty of fixing the book in the right position and getting a proper light upon it is such that very frequently the eyes are overstrained and a new difficulty is produced. Now most weak backs can be strengthened by strengthening the proper muscles. Muscle is strengthened by use, and the Swedish gymnast knows what exercises, or what rubbings, will produce the desired results, and proceeds to strengthen slowly and judiciously. The girl at the same time is allowed plenty of fresh air and suitable games, and soon recovers her normal condition, all the while pursuing the same kind of life as the others, though probably with some relaxation in the way of lessons. Such weak backs ought not to occur as often as they do, if proper attention were paid from the first to the physical conditions of life. I do not mean anything abstruse or difficult, but just the ordinary

Curative gymnastics.

Defects often the result of ignorance, fashion or overwork.

commonplaces; that high-heeled shoes throw the body out of its natural balance and overstrain some muscles; that hard, stiff clothing pressing upon muscles weakens them by causing atrophy, a frequent cause of weak backs; that a growing child must have abundance of sleep, food, fresh air and exercise, and while living in cultivated surroundings and being encouraged in intellectual pursuits, should not be expected to spend more than three or four hours each day according to age, in doing definite brain work. At the age of fourteen a healthy girl may be expected to begin to work as much as five hours a day. So much for gymnastics, the necessity for which it is to be hoped has been sufficiently demonstrated.

Dancing.

Dancing is also a capital form of exercise, provided it is not pursued, as is sometimes the case, to the point of physical exhaustion. The art of fencing is also well worth acquiring. Also bicycle evolutions to music, and even roller skating.

Hours that may reasonably be spent in intellectual work.

Having stated that three hours is enough for intellectual work for most girls up to the age of eleven or twelve, four hours up to fourteen, five up to sixteen, and that six is the utmost a girl of any age ought to attempt; having also said that an hour and a half in the day is enough for the organised games, it remains to fill up the rest of the day, which, excluding sleep and meals, and the necessary time spent in dressing, usually amounts to from two to three hours. The time-table of every girl in the school may be different; I append, as examples, the actual time-tables of twenty girls for a week, the total of forty-four hours being made up of five days of eight hours and one day of four hours.

SAMPLE TIME-TABLES.

Form.	Name.	Age.	Remarks.	Hours per week, including preparation.														Total, headwork.	Extra Subjects.										Total, occupations.	Grand Total.
				English.	Greek.	Latin.	German.	French.	Arithmetic.	Geometry.	Algebra.	Trigonometry.	Science.	Harmony.	Literature.	Scripture.	History.		Piano.	Violin.	Singing.	Drawing.	Dancing.	Gymnastics.	Part Singing.	General Reading.	Needlework.	Workshop.	Gardening.		
VI.	*a*	16·5	Anomalous; as not more than two languages should be studied at one time.	...	7½	9	3	3	1½	3	3	...	...	...	3	3	...	33	...	...	...	...	...	1	3	1½	3½	1½	11	44
,,	*b*	18·416		...	7½	9	...	3	1½	3	3	...	...	3	3	...	...	33	5½	...	...	...	...	1	1	2	1	...	11	44
,,	*c*	17·083	Have not been long enough in the school to work into the system.	...	7½	9	...	6	1½	3	3	...	...	...	3	3	...	33	5½	...	...	2½	...	1	...	...	1½	...	11	44
,,	*d*	17·583		...	7½	9	7½	3	...	...	...	...	...	...	3	...	...	33	5½	...	5½	...	...	1	...	...	2	...	11	44
,,	*e*	18·333	Does ½-hr. curative gymnastics per day.	...	7½	...	...	6	1½	3	3	3	...	...	3	3	...	30	5½	...	3½	...	...	1	...	...	...	3½	14	44
L. VI.	*f*	17·166		...	...	...	7½	6	1½	3	3	...	...	3	3	3	...	30	5½	...	3½	...	...	1	...	...	2½	...	14	44
,,	*g*	16·5	Too many languages.	...	7½	9	...	6	1½	3	3	...	...	...	3	3	...	33	5½	...	...	...	...	1	3	2½	2½	1½	11	44
,,	*h*	16·75		...	...	9	7½	6	1½	3	3	...	...	...	3	3	...	33	5½	...	...	...	1½	1	...	1½	...	1	11	44
V.	*i*	17·083		...	...	...	6	6	3	3	3	...	3	...	1½	3	4½	33	5½	...	...	2½	...	1½	...	...	...	3	11	44
,,	*j*	14·25		...	...	6	...	6	3	3	3	...	...	...	1½	3	4½	30	...	5½	...	2½	...	2	...	...	...	3	14	44
,,	*k*	14·5	Have more extra subjects than is wise.	...	...	6	...	6	3	3	3	...	3	...	1½	3	4½	33	5½	...	...	2½	...	1	...	...	...	...	11	44
,,	*l*	15·75		...	...	...	6	6	3	3	3	...	...	...	1½	3	4½	30	5½	...	...	2½	1½	1	...	...	...	...	14	44
L. V.	*m*	16·		...	...	5	...	5½	2½	2½	2½	...	2½	...	1½	2½	3½	28	5½	...	...	2½	...	2	...	...	...	...	16	44
,,	*n*	13·583	Has no engagement after 7 in the evening [and goes early to bed.	...	...	5	...	5½	2½	2½	2½	...	2½	...	1½	2½	3½	28	5½	...	...	2½	...	2	...	...	...	...	13	41
,,	*o*	15·		...	...	5	...	5½	2½	2½	2½	...	2½	...	1½	2½	3½	28	5½	...	...	2½	1½	2	...	...	...	...	16	44
,,	*p*	16·166		...	...	...	5	5½	2½	2½	2½	...	...	2½	1½	2½	3½	28	5½	...	...	...	1½	2	...	...	...	...	16	44
IV.	*q*	14·916		1½	...	5	...	5½	3½	2½	...	...	2½	...	2½	2½	2½	28	5½	...	...	2½	1½	2	...	...	...	...	16	44
,,	*r*	14·75		1½	...	5	...	5½	3½	2½	...	...	2½	...	2½	2½	2½	28	...	...	...	2½	1½	2	...	...	...	...	16	44
,,	*s*	14·		1½	...	5	...	5½	3½	2½	...	...	2½	...	2½	2½	2½	28	5½	...	...	2½	1½	2	...	...	...	...	16	44
,,	*t*	13·833	Goes early to bed.	1½	...	5	...	5½	3½	2½	...	...	2½	...	2½	2½	2½	28	5½	...	...	1½	...	2	...	...	...	2	13	41

And here it is important to note that a great deal of the training requisite to make a girl really useful, *i.e.*, to make her industrious, prompt, intelligent, thoughtful, thorough and accurate, can quite as easily be given by means of work which is not intellectual, thereby saving the poor brain, which we have often strained to the uttermost in the past, from the weariness and fatigue consequent upon overwork, and girls may be sent out from school not anæmic and weak-backed, hating the sight of a book, but healthy and vigorous, keenly alive to every opportunity that offers for self-improvement, earnest and self-restrained, with trained powers ready to devote themselves to the duties which offer. For the purposes of training then, I would suggest a variety of handicrafts,[1] such as bookbinding, needlework, the practising of various musical instruments, part singing, drawing and gardening. In some cases time also is given for general reading in the library—this may include English and other modern languages—and is often valuable in keeping up a modern language that has been acquired early, besides cultivating breadth of view and literary taste. The whole school ought also to be organised as a Fire Brigade and regularly drilled. It will be noticed at once that cooking, dressmaking, domestic economy, sick nursing, physiology and hygiene are omitted. These subjects are admirable at school age for girls who intend to make them their work in life, but for

The true end of school life.

Occupations not purely intellectual.

[1] It is to the admirable curriculum arranged by Miss Gray, the headmistress of St. Katharine's School, St. Andrews, that I am indebted for my views on the subject of handicrafts and short hours for intellectual work.

our own girls, though some of them suggest suitable holiday recreations, I believe that they are best acquired by devoting six months or a year specially to the purpose when school life is over. They do not seem to me to admit of a sufficient amount of training, in proportion to the amount of time they consume. The knowledge, so essential for the welfare of the individual, of phenomena, such as the properties of air and water and the laws of heat, is acquired and the practical applications are pointed out by every intelligent teacher during the study of physics and chemistry; and care of the health receives constant practical attention, so that it is unnecessary to emphasise it during school life by special lessons. Needlework is essential for every woman, and facility with the needle is more easily acquired early, say from ten to fourteen, when the fingers are really large enough to use such a delicate instrument as a needle; but, as with everything else, having acquired the elements thoroughly, it must be a matter of individual taste whether the worker proceeds to acquire the higher branches of the art. The same may be said of piano, violin and drawing. Bookbinding, woodcarving and joinery give great scope for the development of neatness, accuracy and artistic talent. An immense deal of interest may also be excited by gardening, and much information of a practical and botanical kind, likely to be useful in later life, may be obtained. Every girl who wishes it, should have a small plot of garden to cultivate for herself.

Handicrafts.

Here it may be as well to mention that where facilities for bathing exist, provided great care is exercised in only allowing girls in perfect

Swimming.

health to indulge in it, and then for not too long at a time, no finer exercise exists than swimming. The necessary position of the swimmer, with arms extended and head well thrown back, is an admirable corrective to any tendency to stoop that may be acquired by bookwork.

Before concluding this chapter on the cultivation of the body, it may be useful to append tables of the heights and weights of girls at different ages. These are compiled from careful measurements taken regularly three times every year at St. Leonard's School, St. Andrews, during a period of nearly six years, an Avery's weighing and measuring apparatus being used. The girls were always weighed in their gymnastic costume of the thickness worn in winter, and measured in their shoes. A certain small percentage were usually found to have lost weight, the proportion being larger in the summer time. We found, however, that such losses were unimportant, unless persisted in. If, for example, a growing girl did not increase in weight during a year, and was lighter than the average for her age and height, then it would be high time to send for the doctor and have her thoroughly overhauled. On the other hand, if a girl was found to be persistently idle and inattentive, though apparently in good health, on consulting the weight book it would usually be found that she was underweight for her age, and a cure was easily effected by cutting off some of her work, giving her extra nourishment and more time for exercise in the open air. It is indeed truly awful to reflect on the number of bad habits, that is, moral faults, that may be induced and fostered in those under our charge by neglect of suitable health conditions.

Importance of noting the weight and rate of growth.

The tables are sound, so far as they go, but they do not go nearly far enough, the basis upon which they are founded being too narrow, and it is much to be wished that the Anthropometric Society could see its way to organising a series of observations over a much wider area.

I.—Table showing the average height and weight of British girls from the ages of nine to twenty, stating in each case the number of observations made. Also showing the average increase per annum deduced from the same observations taken three times in each year.

Ages.	Height.	Weight.	Number of observations made.	Increase.	
From	ft. in.	st. lb. oz.		In Height. in.	In Weight. lb. oz.
9 to 10	4 3·38	4 4 10	22		
10 ,, 11	4 5·763	4 12 14	36	2·383	8 4
11 ,, 12	4 8·403	5 6 6	49	2·64	7 8
12 ,, 13	4 11·509	6 5 1	81	3·106	12 11
13 ,, 14	5 1·639	7 2 2	218	2·13	11 1
14 ,, 15	5 3·128	7 12 3	490	1·489	10 1
15 ,, 16	5 3·972	8 6 0	737	·844	7 13
16 ,, 17	5 4·451	8 11 6	870	·479	5 6
17 ,, 18	5 4·666	9 1 7	627	·215	4 1
18 ,, 19	5 4·804	9 4 10	242	·138	3 3
19 ,, 20	5 5·267	9 5 6	51	·463	12

of inches per annum of the rainfall, but these are details which are not generally easy to ascertain.

Ventilation and warming.

Having secured a suitable spot, with abundant space, a large portion of it level for the purpose of play, see that the building is commodious, well-built, well-lighted, and thoroughly dry, and have all the windows hung top and bottom so that there may be plenty of fresh air, and have good fireplaces. Fireplaces are decidedly the most healthy method of warming for all living rooms, but hot-water pipes are unobjectionable, and far more convenient and economical for schoolrooms.

Arrangement of buildings and lighting.

Every school of course has its own method of arrangement, but it is preferable where possible to have a central building for teaching purposes, containing schoolrooms, art-room, laboratory, workshops and gymnasium, surrounded by houses of residence, each holding about twenty-five girls. The houses should be warmed with fireplaces, the school by means of any warming apparatus at the time in vogue. In both school and houses it is most desirable to have electric light because it does not vitiate the air.

The accommodation in the building will naturally be arranged in accordance with the ideas of school organisation which it is intended to carry out, different plans being suitable for different kinds of schools.

Water supply and drainage.

An abundant and thoroughly wholesome water supply is absolutely essential, and the drainage must be well planned and perfectly laid, so as to stand the various customary tests, and must be properly trapped and ventilated.

As regards area and cubic space and other minute details of a hygienic kind, I cannot do better than refer mistresses to Dr. Clement Dukes' admirable *Health at School*, published by Cassell & Co., which is a complete compendium of the subject, merely premising that for a book published in 1886 and re-published in 1895, a less sweeping condemnation of all girls' schools might have been made. Air and space.

I do not myself feel that there is danger of unwholesome crowding in secondary residentiary schools, provided that there are separate living and school accommodation, such as I have already indicated, and also provided that every girl has her own cubicle fully furnished. The smallest area upon which it is possible to arrange the usual cubicle furniture with any degree of comfort, is sufficient to provide enough cubic space of air in a room twelve feet high.

A chapter on the Cultivation of the Body seems hardly complete without some mention of that without which the body cannot grow or even continue to exist, namely, food. As will have been seen from the tables given above, growth during the early years spent at a secondary residentiary school is exceedingly rapid, and food is necessary to support it; also every form of activity of any of the faculties of the being causes waste of substance and necessitates recuperation, which will be obtained chiefly by means of food and sleep. Food, therefore, must be abundant; it must be of good quality, well cooked, attractively served, and helped in a tempting manner. Plenty of time should be given for partaking of the meal, but the girls should not be kept sitting so long as to be bored, and conversation should be freely in- Food must be abundant.

dulged in. I do not myself think that solid meat should be given except at the midday meal, but both at breakfast and at supper there should always be a savoury dish, consisting of fish, eggs, macaroni, rice or vegetables, with occasional admixtures of meat, ham, tongue, etc., to ensure variety; porridge should also be provided for breakfast. The great essential is variety. Besides these three meals there should be a light luncheon consisting of hot soup and bread, or cocoa, or milk, according to taste; and in the afternoon, after games and changing, the refreshment of tea and bread and butter, now and again varied with cake or a bun, before going into afternoon school. Sugar in abundance and milk should always be upon the dinner table, to be partaken of according to taste with the pudding, and jam or marmalade and golden syrup should be provided for breakfast and supper. In this way the quantity of saccharine matter, so essential for a growing child, is supplied. Greediness is not induced because the natural appetites are freely and wholesomely supplied, and the habit of self-indulgence is kept in abeyance for the same reason, because the ordinary diet is so satisfying that there is no craving for sweets and other tuck-shop delicacies. But even so, it is desirable to give sweetmeats occasionally after meals, rather than allow girls even to fancy that they want to go and buy them for themselves. Fresh fruit also is very good and wholesome and should be available when required for health; it will often be needed if the water is at all hard, and should occasionally be given in liberal quantities, say instead of pudding. Vegetables too must never be forgotten. Some people

There must be variety.

Sugar and fruit necessary.

will be inclined to say that girls are not fed as well as this in their homes! That may sometimes be possible, and indeed I have known of cases where, from a terribly mistaken view of economy, or from a desire to teach self-restraint, growing girls have been stinted in food, with most lamentable results in after life. I am not, however, afraid that school will ever enter into competition with the home, no matter how good the puddings are; and it is natural that such things should be more considered at school where it is realised that even such minor matters as the bread and butter enter into the general scheme of education, and may influence for good or evil the future lives of the pupils. In some homes, on the other hand, girls receive food much too rich or too stimulating, made dishes and late dinners not being conducive to healthy digestion.

Disastrous effects of insufficient or unwholesome food.

Before closing this chapter a word must be said about the emotions; healthy bodily development is hindered or prevented if they are too early encouraged, as it is also by want of food, rest, fresh air, exercise and interest, or by the excess of either physical or intellectual activity. The emotional nature is over-stimulated by excessive time spent upon music, especially if the music is of a certain kind. Much care is needed, more particularly if there is decided musical taste, to begin with composers who appeal least to the emotional nature, and not to specialise in music at all until a thorough intellectual groundwork has been laid in the general education. Latin, mathematics and vigorous games hold a far more important part in the general scheme of a comprehensive education than is always apparent.

Danger of over-stimulating the emotions.

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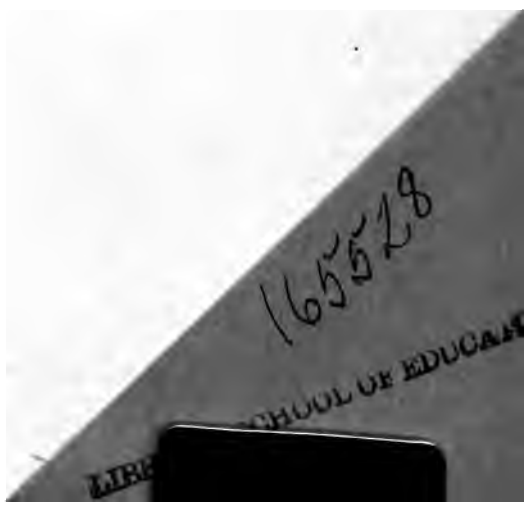
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